THE AUTOMOBILE

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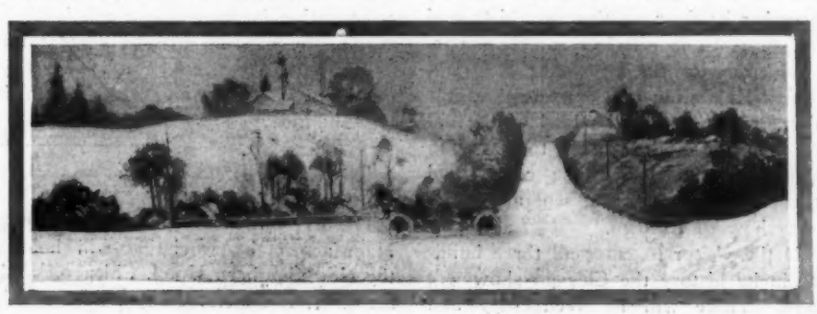
The Chicago Show

CHICAGO, Nov. 28.—Holding a show under the auspices of an organization which includes the adjective national in its title does not necessarily imbue the event itself with that characteristic, but, for the past three years, the Chicago Show has had other and much more substantial claims to the honor than the mere fact that the National Association of Automobile Manufacturers was responsible for it.

Constituting, as it does, the only show of the year in which American makers come together regardless of trade or other affiliations, it has a claim on the title of national that is indisputable, and the event which will occupy every available foot of space in the Coliseum and First Regiment Armory, as well as the overflow of the commercial section in the Seventh Regiment Armory, during the period of November 30-December 7, will be more truly representative of the American industry as a whole than any other gathering of manufacturers that has ever been held in this country.

There will come together under one roof, figuratively speaking, makers of every class of power-driven vehicles that may be termed automobiles, from the smallest and most recent comers in the shape of buggyabouts up to the most ambitious production of the old-established maker, the value of whose exhibit alone is frequently more than a score of smaller cars.

The fact that the aggregation thus assembled embraces not only all the most representative makers, but likewise the great majority of those generally referred to as "the American industry," will be evident from the fact that the bulk of the exhibitors is made up of the membership of the National Association of Automobile Manufacturers, Inc., the Association of Licensed Automobile Manufacturers, and the American Motor Car Manufacturers' Association, where complete vehicles are concerned, and the members of the Motor and Accessory Manufacturers, Inc., in the realm of those productions of smaller size, but equally great importance, that always serve to fill every available inch of space not adapted to showing cars, and that add much of interest to every automobile show.



To the seasoned show-goer, the collection on the main floor of the Coliseum alone has a real national flavor, for here are invariably gathered that coterie of old-line makers who have always formed the backbone of the industry, and who are given the preference in the allotment of spaces to which their standing entitles them. And, in fact, age and responsibility of standing are the only qualifications that result to the advantage of the exhibitor in this manner, for otherwise the distribution of space is entirely according to lot, the drawing being held last July, when practically everything available was contracted for. This concentration enables the visiting dealer to examine practically all the productions of the year in one show, and, as usual, complimentary admissions will be issued to the trade during the usual hours and under the same conditions as before.

In the matter of decorations the Chicago show has always been distinctive, and, on the present occasion, Manager Miles has outdone all his previous efforts in this line and prepared a setting that will be a surprise to the seasoned rounder, as well as the newcomer who gets his first look at the interior of the Coliseum next Saturday afternoon and evening, for, unlike the New York shows, Chicago opens its doors in the afternoon.

Some idea of the magnitude of the task of decorating such a place may be gained from the fact that there will be approximately 9,000 square feet of oil paintings alone. There are 142 of these in all, ranging in size from 4x8 to 8x24 feet. The subjects of these paintings have not been selected at random, but, ni the majority of cases, the smaller ones situated close to the exhibits represent scenes in which the cars shown near them have actually taken part, while others picture American cars in all parts of the world, each scene representing an actual occurrence reproduced from a photograph. Racing has not been overlooked, the subjects including two scenes at the Vanderbilt Cup

SAMUEL A. MILES,
General Manager N. A. A. M.

race of 1906, a race on the Detroit track, scenes at Brookland's track in England and the twenty-four-hour races at Morris Park. In other ways, the plan of decoration and equipment is even more elaborate than that of the last show, which was generally conceded to be the finest thing of the kind ever seen in connection with a purely industrial exhibition. The amount of material employed to complete this truly elaborate setting for the automobile is literally stupendous, and all of it has been designed to harmonize in a complete *ensemble*, in which the automobile itself shall be the chief attraction and not the decoration. In other words, effort has been directed toward the creation of an automobile atmosphere, and that Manager Miles has more than succeeded in realizing this ideal goes without saying.

The great demand for space, which the amount available in both the Coliseum and the First Regiment Armory falls far short of filling, has led to the adoption of one expedient after another to extend the cramped interior of what appeared to be a vast "unfillable" hall to the exhibitors in the Coliseum of early Chicago show days. The First Regiment Armory was long since made an annex by the now familiar "pneumonia alley" connection, but even its ample floor and galleries failed to satisfy the needs of all intending exhibitors, so that for the first time in its history the basement of the Coliseum has been impressed into service for this purpose, both cars and accessory exhibits being shown. There will be 20 of the former and more than twice as many of the latter thus housed in space never hitherto consid ered available.

THOMAS HENDERSON
President N. A. A. M.

Though not denominated as such, the independent exhibit of purely commercial vehicles which is to be housed in the Seventh Regiment Armory, located at Sixteenth and State streets, about four blocks from the Coliseum, is really another expedient which would naturally be considered as relieving, in great measure, the demands for space in the main buildings, but this has not proved to be the case. As a matter of fact, it is stated that, after mature consideration, the National association decided that the time had arrived for a comprehensive and independent exhibition of commercial vehicles of all types, as that portion of the industry, in many respects identified with the building of pleasure cars, has assumed such importance as to be well able to support a show of its own, giving to the world a much more definite idea of its development and future possibilities than could be obtained where the business automobile was scattered at random among those designed purely for pleasure purposes.

The Seventh Regiment Armory is 353 feet long and 153 feet wide without a post to encumber its floor, so that the thirty odd exhibitors who have taken space in it will have ample opportunity to display their productions to the best effect. It will be known as the First Annual Exhibition of Commercial Motor Vehicles, and though really forming part and parcel of the old show despite its isolation, it has been thought fit to give it a separate title, thus marking the time when the commercial vehicle assumed sufficient importance to warrant separate representation in an independent show of its own.

One admission will entitle the visitor to enter all three buildings, but for the first time in its history the Chicago show will have two high-priced days. These will be Wednesday and Thursday, on which the admission will be raised to one dollar, otherwise remaining at 50 cents, as usual. It is not intended, however, to crowd the commercial vehicle's exhibit so as to impede or prevent proper investigation by visitors genuinely interested, the management feeling that it is due to the exhibitors in this department to afford the interested investigator every opportunity to secure all the information he desires. Thus, only visitors to the Coliseum who are sufficiently interested to ask for tickets to the commercial show will be given them. There will be no charge for these admissions, and every effort is being made to secure the attendance of those interested in automobile transportation. Season tickts have been forwarded to department heads of large houses, members of such bodies as the Illinois Manufacturers' Association, and to prominent merchants throughout the country. Each exhibitor has been furnished with as many invitations as he may require for distribution to his prospective customers.

MILTON J. BUDLONG
General Manager A. L. A. M.

ONLY OPTIMISTS ARE WANTED AT CHICAGO.

A letter was addressed to all those who for business purposes are to be in attendance at the Chicago show. Here is some of the good advice which Manager Miles sent through the mail:

There is no money panic in Chicago; but for the newspaper reports of the doings of Wall Street, Chicago would long ago have forgotten that there had been so much as a ripple. And the great West, about which the East knows so little, is fairly bulging with prosperity.

The agents will be at Chicago; the public will turn out at Chicago. Shall we dampen their ardor by displaying long faces? Or shall we instill confidence and beget enthusiasm by a week of activity, bustle and cheerful bearing?

Your agent in Chicago can get only a certain number of cars, tires, or whatever it is you make. It is his business to make the people understand that to secure early deliveries it is necessary to order now. He can't do it by encouraging the belief that business is poor. Tell him that if he is an agent worth having it is "up to him" to see that his men make every endeavor to influence public opinion in the right direction. And remember that it is equally "up to you."

Let us banish the thought that there is anything wrong with the automobile business. I ask you, in justice to yourself, to your company, and to the show, to carry out and insist that your men carry out this suggestion; that you and they refuse to admit, even to your intimates, that there is any scarcity of business. Leave your troubles at home.

A. L. A. M. BRANCH TO MEET IN CHICAGO.

A meeting of the Mechanical Branch of the Association of Licensed Automobile Manufacturers will be held during the Chicago show. The principal subjects of the meeting will be the standardization of automobile bodies, co-operation between the automobile engineers and coach builders, the reduction of weight, and proper wheelbase for a practical car.

Representatives of the leading body builders will address the Mechanical Branch meeting and an endeavor will be made toward co-operation between the coach building and automobile industries. The meeting will be held at the Chicago Athletic Club, as it was last year. The following day the engineers will visit the show in a body and make an official inspection of the cars on exhibition.

A. M. C. M. A. MEETING AT CHICAGO.

The Committee of Management of the American Motor Car Manufacturers' Association will hold an important session at the New Southern Hotel, Chicago, Wednesday morning, December 4. It is understood that the 1908 show question will receive some attention.

THE CHICAGO AUTOMOBILE CLUB.

The Chicago Automobile Club is just entering upon the fifth year of its incorporate existence. The club was organized in 1902, but it was not until July 2, 1903, that authority was granted by the State of Illinois to incorporate this pioneer western motoring organization. During the first year of the club's existence, prior to incorporation, the membership reached a total of about seventy-five. Meetings were held in Steinway hall, and the ardor increased of the devotees of the new sport.

IRA M. COBE, C. A. C.

The officers at that time were: President, Arthur J. Eddy; vice-president, F. C. Donald; secretary, Charles T. Jeffery; treasurer, D. David Cottrell. Mr. Eddy soon after left for New York and Mr. Donald succeeded to the chief executive position in the organization.

Plans for the occupancy of a permanent home were early discussed by the club members, and a short time lease was soon executed for the Hetty Green property at 243 Michigan avenue. Shortly after the occupancy of this building the application for incorporation was made, the signatures on the articles being those of J. A. Ellis, Charles E. Bartley, Robert Tarrant, Jr., and Charles W. Gray. The first board of managers of the club consisted of F. C. Donald, Charles E. Bartley, Robert Tarrant, Jr., Charles W. Gray, W. H. Hoops, Dr. F. C. Greene, J. A. Ellis, F. X. Mudd, S. A. Miles, John Farson, and Dr. F. H. Davis.

John Farson assumed the leadership of the club in the fall of 1903 and was succeeded the following year as president by Ira M. Cobe. Mr. Farson again became president in 1905 and Mr. Cobe again succeeded him in 1906. During this entire period Sidney S. Gorham remained in office as secretary. Mr. Cobe has been re-elected as president for 1907-1908. The new board of managers follows: President, Ira M. Cobe; first vice-president, F. H. Pietsch; second vice-president, T. J. Hyman; secretary, N. H. Van Sicklen; treasurer, C. E. Gregory. Directors: John Farson, T. N. Koehler, A. J. Banta, Claude Seymour, F. D. Countess, W. W. Shaw.

HOME OF CHICAGO AUTOMOBILE CLUB.

The club's home on Michigan avenue did not long prove adequate to the needs of the rapidly growing organization, and when the temporary lease expired in 1905 it was decided to relinquish the club home for the present and direct all energies toward the construction of the new clubhouse in Plymouth Place. During the intervening period the club occupied rooms.

THE CHICAGO MOTOR CLUB.

A particularly energetic organization has been the Chicago Motor Club, which has been aptly designated as the "do something" club. While it is probably true that the burden of the work has devolved upon a few, it must be stated that the other members have loyally supported, whenever called upon, the various successful events conducted by the club. The president of the organization is one of the pioneers of automobiling in Chicago, F. C. Donald, who, with two other friends, was responsible for the formation of the Chicago Automobile Club. The trio at the time were the owners of the only three gasoline cars in Chicago. Mr. Donald was twice honored with the presidency of that club, which, at the conclusion of its second year, had a membership of over 500 and was comfortably located in a clubhouse.

F. C. DONALD, C. M. C.

Mr. Donald was the presiding officer of the Chicago meeting which resulted in the birth of the American Automobile Association. Subsequently he served for two years on the Racing Board and as a member of the Vanderbilt Cup Commission. Treasurer of the National Good Roads Association and of the Chicago Signboards Commission, a director of the New York-Chicago Good Roads Association, and lastly and mostly president of the energetic Motor Club, Mr. Donald is a prominent figure in Western automobiling. Charles P. Root and Secretary George G. Greenberg complete a trio with President Donald which is considered largely responsible for the activities of the Chicago Motor Club.

THE ILLINOIS STATE ASSOCIATION.

The Illinois State Association of the A. A. A. recently secured a new president in the person of L. E. Myers, a well-known figure in Chicago automobiling and one of the early members of the Chicago Automobile Club. President Myers succeeded Sidney S. Gorham, the organizer of the State Association, and who was a factor in the passage of the present Illinois automobile law. The State Association, under the leadership of Mr. Myers, is rapidly gaining in membership and several new clubs will be added in the near future. It is expected that before the end of another year the State Association will have grown very appreciably and prove of great benefit to the automobilists of Illinois, which State needs all kinds of roads building. It is the intention of the State body particularly to work for highways improvement, for its directors believe that the day has arrived when the autoists should come out in the open and use every bit of their influence for the betterment of roads. Touring in Illinois, during the rainy seasons of the year, is a wearisome task, for few of the roads have any bottom and the mud is usually axle deep.

L. E. MYERS, I. S. A. A.

In assuming the presidency of the Illinois association, Mr. Myers brings to the task a ripe experience in automobile matters and possesses an accurate comprehension of the great work which can be done for the general good of automobiling by an organization which reaches out to all sections of the State. President Myers will distribute his appointments in such manner as to make all the clubs feel that they are a part of the machinery.

THIRTY-SIX TO START IN THREE-DAY MUD DRIVE

CHICAGO, Nov. 25.—Almost upon the eve of the start of the Chicago Motor Club's reliability contest, which begins its first day's drive of 230 miles to South Bend, Ind., and return to-morrow, 26 makers have signified their intention of taking part in what is doubtless destined to be a glorious mud rout, by nominating 36 cars. The discrepancy between the number of makers and cars is accounted for by the fact that in a few instances more than one car of the same make has been entered. For example, there will be two Locomobiles, three Mathesons, three White steamers, and two representatives each of the Stoddard-Dayton, Jackson and Pierce-Arrow, both of the last-named being six-cylinder cars. Of this number, 24 are five and seven-passenger touring cars; one is a four-seated tourabout, the Marion, and 10 are three-seated roadsters, the Reo being the only real representative of the runabout class, while the commercial end also has a single representative in the shape of the Rapid 'bus. Under the usual classification the last-named would ordinarily be placed in Class B, the members of which are compelled to average 17 miles an hour, but as this would be manifestly unjust, it will compete in Class C, or the 14-mile-an-hour class.

A review of the tabulated classification shows a total of 18 cars in Class A, cars listing over $3,000 and which will have to make an hourly average of 20 miles; 12 in Class B, cars listing between $1,800 and $3,000, and six in Class C, listing under $1,800, the last two classes, as already mentioned, having to travel at an average speed of 17 and 14 miles an hour, respectively. In addition to the penalties incurred during the running of the contest, the cars are to be examined after the conclusion of the three-day run and they will be penalized according to their condition. For instance, wheels spread more than 1-2 inch, five points for each 1-2 inch or fraction; the same penalty for each 1-4-inch sag in springs over the one-inch permanent set allowed; 15 points for each 1-4-inch sag in frame; 10 points for each 1-8-inch variation in steering knuckles; one or more cylinders of motor missing in two-block test, 50 points; failure of brakes to stop car in reasonable distance, 30 points; failure of change-speed gear, either forward or reverse speeds, 50 points; perceptible slipping of clutch, 30 points. This examination will certainly add considerably to the value of the awards.

In view of the size and power of the cars in the first two classes, it may appear strange at first sight that such a low average speed will be required of them, but to any one who is familiar with the roads constituting the route of the three-day contest the fact that even these conservative speeds will call for most consistent running on the part of the contestants, if they are to turn up at the various controls on time, will be recognized. And consistent running will mean strenuous effort on the part of the drivers in view of the bogs and mud-holes that form such a large part of the roads to be traveled over. The list of entrants is as follows:

CLASS A. CARS LISTING OVER $3,000. AVERAGE 20 MILES AN HOUR.

Nos.	Car	H.P.	Cylinders	Tires	Entrant	Driver	Observer
17.	Frayer-Miller	50	4	Diamond	Oscar Lear Auto Co.	J. Barnes	R. M. Hess
11.	Jackson	20-24	4	Goodyear	Det. Jackson Auto Co.	F. L. Holmes	W. Diehl
33.	Locomobile		4		Locomobile Co. of America		
34.	Locomobile		4		Locomobile Co. of America		
6.	Matheson	50	4	Diamond	Palmer & Singer Mfg. Co.	R. G. Kelsey	
7.	Matheson	50	4	Diamond	Palmer & Singer Mfg. Co.	D. Buck	
26.	Matheson	35	4		Palmer & Singer Mfg. Co.	J. Heineman	
4.	Peerless	30	4	Diamond	W. G. Tennant	C. Burman	
2.	Pierce-Arrow	40	6	Goodrich	H. Paulman & Co.	P. Hoffman	F. Paulman
29.	Pierce-Arrow	40	6	Goodrich	H. Paulman & Co.	A. Kumpf	
1.	Royal Tourist	45	4	Diamond	R. W. Cook	R. W. Cook	L. S. Jullien
32.	Silent Knight	35-40	4		Knight & Kilbourne	E. Kilbourne	S. Goodwin
8.	Stevens-Duryea	50	6	Fisk	Louis Geyler	C. Clark	F. Leavenworth
27.	Stoddard-Dayton	50	6	Goodrich	McDuffee Auto Co.	B. Payne	G. F. Discher
20.	Studebaker	30	4	Diamond	Studebaker Mfg. Co.	H. M. Chambers	
21.	Thomas Flyer	60	4	Goodrich	C. A. Coey	C. A. Coey	L. Jackman
22.	White	30		Diamond	White Co.	H. Sheridan	A. Edmondson
23.	White	30		Goodrich	White Co.	W. Leitch	H. P. Thompson

CLASS B. CARS LISTING FROM $1,800 to $3,000. AVERAGE 17 MILES AN HOUR.

Nos.	Car	H.P.	Cylinders	Tires	Entrant	Driver	Observer
12.	Autocar	30	4	Fisk	J. Levy Co.	B. Oldfield	Frank Vaughan
15.	Dragon	24	4	Diamond	Dragon Auto Co.	J. W. Haynes	A. L. Kull
14.	Haynes	30	4	Diamond	Haynes Auto Co.	F. Nutt	J. C. Graves
28.	Kisselkar	30-35	4		Webb Jay Motor Co.	Webb Jay	Frank Jay
19.	Marion	24	4		Favorite Auto Co.	C. Price or H. Stutz	W. Bowman
36.	National		4		Ralph Temple Auto Co.	John Aitken	
30.	Oldsmobile	38	4	Diamond	Olds Motor Works	R. Owen, C. Hunter	P. Henderson
31.	Pierce-Racine	40	4	Goodyear	Pierce Engine Co.	J. Henson A. Pierce	L. F. Stevens
35.	Premier	35	4		Premier Motor Mfg. Co.		
3.	Rambler	32	4	Goodrich	T. B. Jeffery & Co.	T. Collier	E. Dickson
16.	Rapid 'Bus	25	2	Firestone	Rapid Motor Vehicle Co.	F. Grogan	R. Johnson
9.	Stoddard-Dayton	30-35	4	Goodrich	McDuffee Auto Co.	C. A. Englebeck	W. McDonald
5.	Wayne	30	4	Morgan & Wright	Wayne Auto Co.	F. Gremel	J. Porter
24.	White	20		Diamond	White Co.	C. E. Denzer	G. L. Schofield

CLASS C. CARS LISTING AT $1,800 AND UNDER. AVERAGE 14 MILES AN HOUR.

Nos.	Car	H.P.	Cylinders	Tires	Entrant	Driver	Observer
18.	Auburn	24	2	Goodrich	Auburn Auto Co.	R. E. Parker	G. Howard
10.	Jackson	20-24	2	Goodyear det.	Jackson Auto Co.	E. Schiffler	R. Johnson
13.	Maxwell	20	2		Maxwell-Briscoe-Chase Co.	O. W. Klose	W. B. Jameson
25.	Reo	18-20	2	Michelin	W. W. Shaw Co.	M. D. Vandercar	H. F. Musgrave

GATHERED AT AMERICA'S NATIONAL AUTO SHOW

COMPARISONS are odious, 'tis true, but it is only by the light of former achievements that progress can be measured, so that it is in no spirit of disparagement that the vast aggregation which will be housed in Chicago by the Coliseum, the First Regiment Armory, and the Seventh Regiment Armory, from November 30 to December 7 this year, calls attention to itself and its size as compared with that of either of the show functions fostered in New York City. Chicago is accustomed to doing big things and calling them bigger, so that the average man who is not of the Windy City must have recourse to the salt at times, but he will certainly not need it where the Chicago show is concerned. If the following statistics of the "Who they are and where they exhibit" order fail to convey an adequate impression, as statistics usually do, the fact that there will be gathered together under the three roofs which have been found necessary to accommodate the aggregation no less than 120 exhibitors of complete cars cannot be other than extremely significant when it is recalled that New York's two shows did not bring together more than 110 all told. In short, Chicago's show is New York's two functions rolled into one, with on the side a very generous sprinkling of manufacturers who do not regard the affairs in the metropolis as within their show program. And how large a "side" this is becomes apparent both on examination of the list of car exhibitors, as well as those in the seemingly boundless field of accessory making. No further comparison or comment as to proportions would appear to be necessary after this.

Perusal of the list of automobile builders reveals the fact that the "old guard" of the industry is lined up in full force, gasoline, steam and electricity all being well represented, while the showing of new productions, particularly those light cars that are distinctly of American evolution, is such as only the Chicago show can boast of. In brief, here the popular-priced car is to be seen in all its glory and in its widest range of price and perfection.

Accessory makers are here, there, and everywhere, even to the extent of having a separate show of their own in connection with the gathering of business wagons in the Seventh Regiment Armory. No section of the tri-partite gathering of cars lacks its concomitant showing of accessories of everything under the sun for the auto and the autoist. And seldom has such a very comprehensive gathering of manufacturers who devote their attention to the production of the thousand and one things generically known as accessories been brought together at one time. It is somewhat of a misnomer to dub them all accessory exhibits, for, besides the many who make tires, lamps, ignition apparatus, distance-recording instruments, tops, lubricants, and so on *ad infinitum*, there are those who show motors, frames and similar important essentials of the car which cannot be viewed in any light as accessories.

GASOLINE PLEASURE VEHICLES.

ACME: Acme Motor Car Co., Reading, Pa.
APPERSON: Apperson Bros. Auto Co., Kokomo, Ind.
AEROCAR: Aerocar Motor Co., Detroit.
AMERICAN LOCOMOTIVE CAR: American Locomotive Automobile Co., 1886 Broadway.
AMERICAN: American Motor Car Co., Indianapolis.
AUTOCAR: Autocar Co., Ardmore, Pa.
AUSTIN: Austin Automobile Co., Grand Rapids, Mich.
AUBURN: Auburn Automobile Co., Auburn, Ind.
ATLAS: Atlas Motor Car Co., Springfield, Mass.
AURORA: Aurora Motor Works, Aurora, Ill.
BUGMOBILE: Bugmobile Co. of America, 208 Wabash Ave., Chicago.
CADILLAC: Cadillac Motor Car Co., Detroit.
CLEVELAND: Cleveland Motor Car Co., Cleveland.
COLUMBIA: Electric Vehicle Co., Hartford, Conn.
COLT RUNABOUT: Colt Runabout Co., 1549 Michigan Ave., Chicago.
CORBIN: Corbin Motor Vehicle Corp., New Britain, Conn.
C. F.: Cornish-Friedberg Motor Car Co., 1233 Michigan Ave., Chicago.
C.V.I.: C.V.I. Motor Car Co, Jackson, Mich.
DE LUXE: De Luxe Motor Car Co., Detroit.
DRAGON: Dragon Automobile Co., Philadelphia.
DUER: Chicago Coach & Carriage Co., 1223 Michigan Ave., Chicago.
DIAMOND T: Diamond T Auto Co., 3 Huron St., Chicago.
ELMORE: Elmore Mfg. Co., Clyde, O.
FRANKLIN: H. H. Franklin Mfg. Co., Syracuse, N. Y.
FRAYER-MILLER: Oscar Lear Automobile Co., Springfield, O.
GAETH: Gaeth Automobile Co., Cleveland.
GALE: Western Tool Works, Galesburg, Ill.
GEARLESS: Gearless Transmission Co., Rochester, N. Y.
GLIDE: Bartholomew Co., Peoria, Ill.
GREAT SMITH: Smith Automobile Co., Topeka, Kan.
HATFIELD: Hatfield Motor Vehicle Co., Miamisburg, O.
HAYNES: Haynes Automobile Co., Kokomo, Ind.
HOLSMAN: Holsman Automobile Co., Monadnock Block, Chicago.
IMPERIAL: Imperial Motor Car Co., Williamsport, Pa.
JACKSON: Jackson Automobile Co., Jackson, Mich.
KISSELKAR: Kissell Motor Car Co., Hartford, Wis.
KNOX: Knox Automobile Co., Springfield, Mass.
LAMBERT: Buckeye Mfg. Co., Anderson, Ind.
LAUTH-JUERGENS: Lauth-Juergens Motor Car Co., Chicago.
LOCOMOBILE: Locomobile Co. of America, Bridgeport, Conn.
LORRAINE: Lorraine Automobile Mfg. Co., Chicago.
LOZIER: Lozier Motor Co., 55th and B'way, New York.
MARMON: Nordyke & Marmon Co., Indianapolis.
MATHESON: Matheson Motor Car Co., Wilkes-Barre, Pa.
MAXWELL: Maxwell-Briscoe Motor Co., Tarrytown, N. Y.
MITCHELL: Mitchell Motor Car Co., Racine, Wis.
MOLINE: Moline Automobile Co., East Moline, Ill.
MONARCH: Monarch Motor Car Co., Chicago Heights, Ill.
MOON: Moon Motor Car Co., St. Louis, Mo.
NATIONAL: National Motor Vehicle Co., Indianapolis.
NORTHERN: Northern Motor Car Co., Detroit.
OAKLAND: Oakland Motor Car Co., Pontiac, Mich.
OLDSMOBILE: Olds Motor Works, Lansing, Mich.
PACKARD: Packard Motor Car Co., Detroit.
PEERLESS: Peerless Motor Car Co., Cleveland.
PIERCE-RACINE: Pierce Engine Co., Racine, Wis.
PIERCE: George N. Pierce Co., Buffalo.
POPE-HARTFORD: Pope Motor Car Co., Hartford, Conn.
PREMIER: Premier Motor Mfg. Co., Indianapolis.
PULLMAN: Pullman Motor Car Co., 131 La Salle street, Chicago.
PUNGS-FINCH: Pungs-Finch Auto & Gas Engine Co., Detroit.
RAINIER: Rainier Co., B'way and 50th street, New York.
RAMBLER: Thomas B. Jeffery & Co., Kenosha, Wis.
RELIABLE-DAYTON: Reliable-Dayton Motor Car Co., Chicago.
REO: Reo Motor Car Co., Lansing, Mich.
RICHMOND: Wayne Works, Richmond, Ind.
ROYAL TOURIST: Royal Motor Car Co., Cleveland.
SCHACHT: Schacht Mfg. Co., Cincinnati.
STAVER: Staver Carriage Co., 76th and Wallace streets, Chicago.
SILENT KNIGHT: Knight & Kilburn, 1238 Michigan Ave., Chicago.
STEARNS: F. B. Stearns Co., Cleveland.
STODDARD-DAYTON: Dayton Motor Car Co., Dayton, O.
STUDEBAKER: Studebaker Automobile Co., South Bend, Ind.
STEVENS-DURYEA: Stevens-Duryea Co., Chicopee Falls, Mass.
SHOEMAKER: Shoemaker Automobile Co., Freeport, Ill.
THOMAS: E. R. Thomas Motor Co., Buffalo.
TINCHER: Tincher Motor Car Co., South Bend, Ind.
WALTHAM: Waltham Mfg. Co., Waltham, Mass.
WAYNE: Wayne Automobile Co., Detroit.
WELCH: Welch Motor Car Co., Pontiac, Mich.
WINTON: Winton Motor Carriage Co., Cleveland.
WOODS: Woods Motor Vehicle Co., Chicago.

STEAM PLEASURE VEHICLES.

WHITE: White Co., Cleveland.

ELECTRIC PLEASURE VEHICLES.

BABCOCK: Babcock Electric Carriage Co., Buffalo.
BAKER: Baker Motor Vehicle Co., Cleveland.
COLUMBIA: Electric Vehicle Co., Hartford, Conn.
COLUMBUS: Columbus Buggy Co., Columbus.
R. & L.: Rauch & Lang Carriage Co., Cleveland.
STUDEBAKER: Studebaker Automobile Co., South Bend, Ind.
WOODS: Woods Motor Vehicle Co., Chicago.

ACCESSORIES OF ALL KINDS THAT MEET ALL NECESSITIES

TIRES.

Ajax-Grieb Rubber Co., 420 East 126th street, New York.
Continental Caoutchouc Co., 43 Warren street, New York.
Diamond Rubber Co., Akron, O.
Empire Auto Tire Co., Trenton, N. J.
Firestone Tire & Rubber Co., Akron, O.
Fisk Rubber Co., Chicopee Falls, Mass.
G & J Tire Co., Indianapolis.
Goodrich Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Hartford Rubber Works Co., Hartford, Conn.
Healy Leather Tire Co., 1251 Michigan avenue, Chicago.
Leather Tire Goods Co., Newton Upper Falls, Mass.
Michelin Tire Co., Milltown, N. J.
Morgan & Wright, Detroit.
Motz Clincher Tire & Rubber Co., Akron, O.
Pennsylvania Rubber Co., Jeannette, Pa.
Republic Rubber Co., Youngstown, O.
Swinehart Clincher Tire & Rubber Co., Akron, O.

TIRE ACCESSORIES, TOOLS, AND MISCELLANY.

Auto Pump Co., Springfield, N. Y.
Imperial Brass Mfg. Co., 242 So. Jefferson street, Chicago.
Leather Tire Goods Co., Newton Upper Falls, Mass.
Newmastic Tire Co., 68th street and Broadway, New York.
Shaler Co., C. A., Waupum, Wis.
Weed Chain Tire & Grip Co., 28 Moore street, New York.
Wray Pump & Register Co., Rochester, N. Y.

COILS, TIMERS, SPARK-PLUGS, ETC.

Atwater-Kent Mfg. Co., Philadelphia.
Bemus, T. Alton, Boston.
Connecticut Telephone & Electric Co., Meriden, Conn.
Duplex Coil Co., Fond du Lac, Wis.
Hardy Co., R. E., 86 Watts street, New York.
Heinze Electric Co., Lowell, Mass.
Igniter Appliance Co., Cleveland.
Jeffery-Dewitt Co., Newark, N. J.
K. W. Ignition Co., Cleveland.
Kokomo Electric Co., Kokomo, Ind.
Mosler & Co., A. R., 163 West 29th street, New York.
National Carbon Co., Cleveland.
Never-Miss Spark Plug Co., Lansing, Mich.
Pfanstiehl Electrical Laboratory, North Chicago, Ill.
Pittsfield Spark Coil Co., Dalton, Mass.
Splitdorf, C. F., 261 Walton avenue, New York.
Uncas Specialty Co., Norwich, Conn.

DRY AND STORAGE BATTERIES.

American Electrical Novelty & Mfg. Co., 304 Hudson St., New York.
Chicago Battery Co., 1400 Michigan avenue, Chicago.
Dayton Electrical Mfg. Co., Dayton, O.
Electric Storage Battery Co., Philadelphia.
National Battery Co., Buffalo.
National Carbon Co., Cleveland.
Stackpole Battery Co., St. Mary's, Pa.
Vesta Accumulator Co., 1334 Michigan avenue, Chicago.
Vivax Storage Battery Co., 2224 Michigan avenue, Chicago.
Witherbee Igniter Co., 541 West 43d street, New York.

MAGNETOS AND DYNAMOS.

Bosch, Robert, Inc., 160 West 56th street, New York.
Dayton Electrical Mfg. Co., Dayton, O.
K. W. Ignition Co., Cleveland.
Motsinger Device Mfg. Co., Pendleton, Ind.
Pittsfield Spark Coil Co., Dalton, Mass.
Remy Electric Co., Anderson, Ind.
Splitdorf, C. F., 261 Walton avenue, New York.

MAKERS OF AUTOMOBILE PARTS.

Auto Parts Co., 975 Monticello avenue, Chicago.
Baldwin Chain & Mfg. Co., Worcester, Mass.
Briscoe Mfg. Co., Detroit.
Brown-Lipe Gear Co., Syracuse, N. Y.
Brownell Motor Co., F. A., Rochester, N. Y.
Cramp & Sons, William, Philadelphia.
Diamond Chain & Mfg. Co., Indianapolis.
Gemmer Mfg. Co., Detroit.
Gray-Hawley Mfg. Co., Detroit.
Hyatt Roller Bearing Co., Harrison, N. J.
Indestructible Steel Wheel Co., 1303 Michigan avenue, Chicago.
Kinsey Mfg. Co., Dayton, O.
Long Mfg. Co., 1432 Michigan avenue, Chicago.
Muncie Auto Parts Co., Muncie, Ind.
McMullen, Roger B., 1241 Michigan avenue, Chicago.
Midgley Mfg. Co., Columbus.
Shelby Steel Tube Co., Pittsburg.
Ross Gear & Tool Co., Lafayette, Ind.
Spicer Universal Joint Mfg. Co., Plainfield, N. J.
Standard Roller Bearing Co., Philadelphia.
Timken Roller Bearing Axle Co., Canton, O.
Triple Action Spring Co., 1254 Michigan avenue, Chicago.
Prosser & Son, Thomas, 15 Gold street, New York.
Warner Clutch Co., 1461 Michigan avenue, Chicago.
Warner Gear Co., Muncie, Ind.
Western Malleable Steel Co., Detroit.
Whitney Mfg. Co., Hartford, Conn.
Whiteley Steel Co., Muncie, Ind.

LAMPS.

Atwood Mfg. Co.,. Amesbury, Mass.
Badger Brass Mfg. Co., 437 Eleventh avenue, New York.
Dietz Co., R. E., 60 Laight street, New York.
Edmunds & Jones Mfg. Co., Detroit.
Gray & Davis, Amesbury, Mass.
Ham Mfg. Co., C. T., Rochester, N. Y.
Manhattan Screw & Stamping Co., 57th street and West End avenue, New York.
Rose Mfg. Co., 910 Arch street, Philadelphia.
Standard Lamp & Mfg. Co., 45 South Canal street, Chicago.

SPEEDOMETERS.

Auto Improvement Co., 316 Hudson street, New York.
Hoffecker Co., Boston.
Jones Speedometer Co., 76th street and Broadway, New York.
Lipman Mfg. Co., Beloit, Wis.
Motor Car Specialty Co., Philadelphia.
Oliver Instrument Co., Minneapolis.
Smith Mfg. Co., R. H., Springfield, Mass.
Stewart & Clark Mfg. Co., 502 Diversey Boulevard, Chicago.
Veeder Mfg. Co., Hartford, Conn.
Warner Instrument Co., Beloit, Wis.

BODIES, TOPS, WINDSHIELDS, AND PROTECTORS.

Auto Accessories Mfg. Co., Detroit.
Chase & Co., L. C., Boston.
Chicago Coach & Carriage Co., 1223 Michigan avenue, Chicago.
Chicago Windshield Co., 235 Johnson street, Chicago.
Limousine Carriage Mfg. Co., 3515 Michigan avenue, Chicago.
Lingdin-Brugger Co., Fond du Lac, Wis.
Rands Mfg. Co., Detroit.
Sprague Umbrella Co., Norwalk, O.
Troy Carriage Sun Shade Co., Troy, O.
Vehicle Top & Supply Co., St. Louis.

LUBRICANTS AND LUBRICATING APPLIANCES.

Cook's Sons, Adam, 313 West street, New York.
Dixon Crucible Co., Joseph, Jersey City, N. J.
Hancock Mfg. Co., Charlotte, Mich.
Harris Oil Co., A. W., Providence, R. I.
McCord & Co., Old Colony Building, Chicago.
Neeley, Edward, & Co., 244 Wells street, Chicago.
N. Y. & N. J. Lubricant Co., 14 Church street, New York.
Precision Appliance Co., 840 Austin avenue, Chicago.
Randall-Faichney Co., Boston.
Robinson & Son Co., W. C., Baltimore.

SHOCK ABSORBERS.

Gabriel Horn Mfg. Co., Cleveland.
Hartford Suspension Co., 67 Vestry street, New York.
Hotchkin Mfg. Co., 1256 Michigan avenue, Chicago.
Kilgore Mfg. Co., Old Town, Me.
Sager Company, J. H., Rochester, N. Y.

CARBURETERS.

Breeze Carbureter Co., Newark, N. J.
Byrne-Kingston & Co., Kokomo, Ind.
Heitger Carbureter Co., 205 West South street, Indianapolis.
Wheeler & Schebler, Indianapolis.

UNIVERSAL PROVIDERS.

Arnstein, Eugene, 35th street and Shields avenue, Chicago.
Excelsior Supply Co., 233 Randolph street, Chicago.
Franco-American Auto Supply Co., 1404 Michigan avenue, Chicago.

TOOLS, JACKS, ETC.

Cook Standard Tool Co., Kalamazoo, Mich.
Duff Mfg. Co., Allegheny, Pa.
Oliver Mfg. Co., 203 South Desplaines street, Chicago.

COMPRESSED ACETYLENE TANKS.

Avery Portable Lighting Co., Milwaukee.
Prest-O-Lite Co., Indianapolis.

PAINTS, VARNISHES, ETC.

Sherwin-Williams Co., Cleveland.
Standard Varnish Works, 2620 Armour avenue, Chicago.
Valentine & Co., 277 Dearborn street, Chicago.

FUEL AND OIL SUPPLY TANKS.

Bowser & Co., Inc., S. F., Fort Wayne, Ind.
National Oil Pump & Tank Co., Dayton, O.

MOTORCYCLES.

ARMAC: Armac Motor Co., 472 Carroll avenue, Chicago.
THOR MOTORS—Aurora Automatic Machinery Co., Aurora, Ill.
COLUMBIA: Pope Mfg. Co., Hartford, Conn.
CURTIS: G. H. Curtis Mfg. Co., Hammondsport, N. Y.
EXCELSIOR: Excelsior Motor & Mfg. Co., 233 Randolph St., Chicago.
F. N.: Ovington Motor Co., 2234 B'way, New York.
FOWLER: Fowler-Manson-Sherman Cycle Mfg. Co., 45 Fulton St., Chicago.
HARLEY-DAVIDSON: Harley-Davidson Motor Co., 35 E. Adams street, Chicago.
HORNECKER: Hornecker Mfg. Co., Whiting, Ind.
INDIAN: Hendee Mfg. Co., Springfield, Mass.
LIGHT: Light Mfg. & Foundry Co., Pottstown, Pa.
MERKEL: Merkel Motor Co., Milwaukee.
YALE: Consolidated Mfg. Co., Toledo, O.

MISCELLANEOUS.

Acetyvone Co., Niagara Falls, N. Y.
American Aluminum Coating Co., Pittsburg.
Auto Goods Co., Boston.
Automobile Topics, New York.
Chicago School of Motoring, 264 Michigan Ave., Chicago.
Central Rubber Co., 82 Lake St., Chicago.
Cowles & Co., C., New Haven, Conn.
Class Journal Company, New York.
Cycle & Automobile Trade Journal, Philadelphia.
Electric & Mechanical Development Co., Asbury Park, N. J.
Elite Mfg. Co., Ashland, O.
Hans Co., Edmund E., 424 S. 4th St., Minneapolis.
Horseless Age, New York.
McCanna Mfg. Co., 56 N. Jefferson St., Chicago.
Morrison, McIntosh & Co., Grinnell, Ia.
Motor, New York.
Motor Age, Chicago.
Motor Way, Chicago.
Norris Auto Co., Saginaw, Mich.
Norton Co., Worcester, Mass.
Pantasote Co., 11 Broadway, New York.
Ventilated Cushion & Spring Co., Jackson, Mich.

COMMERCIAL VEHICLES IN THE SEVENTH REGIMENT ARMORY

AMERICAN: American Motor Truck Co., Lockport, N. Y.
BRUSH: Brush Runabout Co., Detroit, Mich.
CONTINENTAL: Continental Motor Car Co., 785 Jackson Blvd., Chicago.
COPPOCK: Coppock Motor Car Co., Marion, Ind.
COUPLE-GEAR: Couple Gear Freight Wheel Co., Grand Rapids, Mich.
FRANKLIN: H. H. Franklin Mfg. Co., Syracuse, N. Y.
FRAYER-MILLER: Oscar Lear Auto Co., Springfield, O.
GIFFORD-PETTIT Mfg. Co., 720 Devon avenue, Chicago.
KNOX: Knox Automobile Co, Springfield, Mass.
LAMBERT: Buckeye Mfg. Co., Anderson, Ind.
LOGAN: Logan Construction Co., Chillicothe, O.
MEISELBACH: Meiselbach Motor Wagon Co., A. D., No. Milwaukee.
MITCHELL: Mitchell Motor Car Co., Racine, Wis.
PLYMOUTH: Commercial Motor Truck Co., Plymouth, O.
POPE-HARTFORD: Pope Motor Car Co., Hartford, Conn.
RAPID: Rapid Motor Vehicle Co., Pontiac, Mich.
RELIANCE: Reliance Motor Car Co., Detroit, Mich.
SAFIR: Safir Automobile Co., Zurich, Switzerland.
SAMPSON: Alden Sampson Mfg. Co., Pittsfield, Mass.
SAYERS & SCOVILL, Cincinnati.
STREATOR: Streator Motor Car Co., Streator, Ill.
THOMAS: E. R. Thomas Motor Co., Buffalo.
WORTH: Worth Motor Car Mfg. Co., Evansville, Ind.

STEAM COMMERCIAL VEHICLES.

WHITE: White Co., Cleveland.

ELECTRIC COMMERCIAL VEHICLES.

GENERAL: General Vehicle Co., 62nd and Broadway, New York.
PITTSBURGH: Pittsburgh Motor Vehicle Co., Pittsburgh.
STUDEBAKER: Studebaker Automobile Co., South Bend, Ind.

ACCESSORIES AT THE SEVENTH REGIMENT ARMORY

TIRES.

Automobile Utilities Co., 9 Motor Mart, Boston.
Diamond Rubber Co., Akron, O.
Firestone Tire & Rubber Co., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Hartford Rubber Works, Hartford, Conn.
Morgan & Wright, Detroit.

GENERAL.

Atlas Mfg. Co., Fostoria, O.
Cartier, Chapman & Co., Ludington, Mich.
Hartford Auto Parts Co., Hartford, Conn.
Indestructible Steel Wheel Co.
National Battery Co., Buffalo.
Timken Roller Bearing Axle Co., Canton, O.

SOME STATISTICS OF THE ONLY NATIONAL SHOW

IN all, the show will house more than 300 exhibitors, of which no less than 82 are manufacturers of complete automobiles of the gasoline-driven pleasure type, in addition to which there is 1 maker of pleasure vehicles, 7 of electrics and 13 motorcycle makers. In the commercial section of the show there are 23 manufacturers of gasoline-driven vehicles, 1 steam-driven, and 3 makes of electrics, making a total of 130 exhibits of complete vehicles of both the pleasure and commercial classes. There are close to 200 exhibitors of accessories of every nature, including some 18 manufacturers of tires, 31 of ignition apparatus, 28 of automobile parts, large and small, 9 of lamps, 10 of speed-recording instruments, 10 of tops, bodies and the like, 10 refiners of lubricating oils, and so on down through many minor classifications, ending up with 47 exhibitors of miscellaneous wares.

If it were possible to even approximately figure the value of the cars and accessories shown, it would make a truly astounding total, as the 130 makers stage between 300 and 500 cars of an average value of about $1,500, while the value of the accessory exhibits ranges from a few dollars up to thousands. Statistics of the materials employed in decorating are no less impressive, as there will be some 9,000 square feet of oil paintings, 100,000 square feet of ornamental work in the ceilings, 20,000 feet of paneled wall covering, 110,000 square feet of carpeting, and three or four tons of miscellaneous staff ornaments.

TABULAR STORY OF THE AMERICAN AUTOMOBILE

IF it were possible to reconcile the many variations of design to be found even in the close approach to a standard that at present prevails in automobile design, and to make a composite of the result, it would doubtless be found that the American car thus produced would be characterized by all those features of design and construction that have come to be generally recognized by engineers as the best current practice. It would be readily possible to construct a composite, or rather composites, taking as the basis of each those cars that fall within certain classifications.

For instance, there is that typical product of the soil, the buggyabout, which has already sprung up in such numbers and taken such a firm hold on the popular fancy of the class of users for which it is destined that there can be no possible doubt as to its future. It is characterized by the use of a single or twin-cylinder motor, almost invariably of the horizontal type, ranging from 4 to 12 horsepower, and with a liberal sprinkling of air-cooled engines among the number. Change-speed gears are mainly of the planetary type, with friction types a very close second, and chains practically a standard form of final drive. Some have single-chain drive, others steel cables—but to run over the exceptions would be out of the question. Where price is concerned $600 may probably be put down as the average figure.

But while dwelling on cars at this price it must be mentioned that there is the small, single-cylinder runabout at one end of it and the four-cylinder high-speed runabout at the other, which only goes to show that even when adhering to a particular classification it is extremely difficult to evolve a composite that shall reflect the features of all its component parts. In brief, there are too many American cars that are in a class of their own to make such a division practical or of any value. A price classification brings all these small cars in the "under $1,000" division and it is noticeable that there is far more diversity within this limited price range than is to be found among the cars costing several times as much, for it is mainly in the high-priced cars that the effects of standardization are apparent.

In the $1,000 to $2,000 class there is quite as much diversity as in the initial price division, such extremes as the single-cylinder, 10-horsepower car and the four-cylinder, 20-horsepower car being found at the first-named figure, while the addition of $150 to $250 brings with it a number of vehicles of far more ambitious size and appointments, though even at the $1,000 line there is a wider choice permitted the prospective purchaser than has been the case in past years, as, in addition to two single-cylinder 10-horsepower cars at this price, he will find two representatives of the 20-horsepower four-cylinder type and two of the 18-horsepower two-cylinder opposed type.

Price increases are marked by small jumps—as low as $25, and not exceeding $100, until the $1,850 line is reached. Between $1,000 and the last-named figure there is a wide choice of vehicles designed expressly for American road conditions and capable in large measure of all that their far higher-priced and higher-powered confrères can perform in the shape of endurance and "get-there" qualities, which are sought for by the American buyer above all things. In the lower limits of this division the planetary gear and chain drive prevail, with a scattering instance or two of the friction type, then emerging into the borders of higher standards in the shape of sliding gears and shaft drives, with frequent instances of selective types of gearboxes. Here also are met the air-cooled car and the two-cycle, though these are also to be found under the $1,000 mark.

But it is in the $2,000 to $3,000 class that the American car becomes at once the pride of its builder and owner, and the despair of the foreign manufacturer, who finds it impossible to build a competing model to sell at the lower limits of this classification and can barely succeed in squeezing his lightest models in at its upper line of demarcation. Here standards at once become more uniform, and differences far less striking than is the case in lower-priced constructions, where financial limitations apparently act by contraries in giving far wider latitude of design. In both this and the next classification of $3,000 to $4,000 it would not be particularly difficult to construct a composite that would accurately reflect the characteristics of its numerous components. As a matter of fact, from the $2,000 mark upward it is really but a question of more expensive materials, higher-priced accessories, some of which figure as "extras" in the lower latitudes, and more luxurious equipment and finish, so that the salesman's oft-repeated litany of "vertical motor in front, sliding gear, direct on the high, shaft drive," etc., suffices to cover their salient features fully as well as any extended description possibly could. A price limit is really reached at $6,000, but a few straggling along to the $10,000 figure.

COSTING LESS THAN $1,000

CAR	Price	H.P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheelbase	Weight
Kiblinger, Model A	$250	4	1	Buggy	2	Storage battery	Disc	Planetary	Side chains	65	600
" Model B	300	6	1	Buggy	2	Storage battery	Disc	Planetary	Side chains	65	650
Success	400	12	2	Buggy	2	Dry cells		Friction	Side chains		
Waltham, Model 17	400	4	1	Runabout	2	Dry cells		Friction	Side chains	84	625
Brush, Model 1-B	586	6	1	Piano box	2	Storage battery	Disc	Planetary	Side chains	74	900
Hatfield, Model D-E	600	12	2	Buggy	2	Storage battery		Friction	Side chains	78	900
Waltham, Model 28	600	8	2	Runabout	2	Dry cells		Friction	Side chains	84	700
Ford	600	20	4	Runabout	3	Storage battery		Planetary	Shaft	97	
Jewel, Model D	600	10	1	Piano box	2	Dry cells		Planetary	Chain	70	900
Schacht, Model H	640	12	2	Buggy	2	Storage battery		Friction	Side chains	65	900
Reo, Model B	650	10	1	Touring	4	Storage battery	Disc	Planetary	Single chain	78	
Schacht, Model K	680	12	2	Buggy	2	Storage battery		Friction	Side chains	65	900
Aurora	700	18	2	Runabout	2	Storage battery					
Duer, Model A	750	12	2	Buggy	2	Storage battery		Progressive	Cables	76	1,070
Holsman, Model 10	750	12	2	Buggy	2	Storage battery		Friction	Steel cables	75	940
Columbus	750	10	1	Buggy	2	Storage battery	Disc	Progressive	Side chains	72	
Reliable-Dayton, Model E	780	15	2	Runabout	2	Storage battery	External contracting	Progressive	Side chains	84	1,200
Brush, Model 2-A	800	12	2	Touring	4	Storage battery	Disc	Planetary	Side chains	88	1,200
Ford	800	20	4	Touring	5	Storage battery		Planetary	Shaft	97	
Holsman, Model 11	800	12	2	Buggy	4	Storage battery		Friction	Steel cables	75	1,055
Lambert, Model XVIII	800	18	2		3	Storage battery		Friction	Single chain	95	1,350
Schacht, Model P	800	12	2	Buggy	2	Storage battery		Friction	Side chains	65	900
Maxwell, Model L-C	825	12	2	Runabout	2	Storage battery	Disc	Planetary	Shaft	72	1,500
Buick, No. 10	850	18	4	Runabout	3	Storage battery	Cone	Planetary	Shaft	88	
Cameron, Model 6	850	16	4	Runabout	2	Storage battery	Cone	Planetary	Shaft	84	1,000
Cadillac, Model S	850	10	1	Runabout	2	Storage battery	Disc	Planetary	Chain	82	
Continental	900	12	2	Runabout	2	Storage battery	Disc	Planetary	Shaft	90	1,000
Reliable-Dayton, Model F	925	15	2	Surrey	4	Storage battery	External contracting	Progressive	Side chains	98	1,500
Duer, Model B	950	22	4	Buggy	2	Storage battery			Cables	76	1,200

COSTING BETWEEN $1,000 AND $2,000

CAR	Price	H.P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheelbase	W'ght
Cadillac, Model T	$1,000	10	1	Touring	4	Storage battery	Disc	Planetary	Chain	82	.....
Hewitt	1,000	10	1	Runabout	3	Storage battery	Disc	Planetary	Chain	84	1,200
Ford	1,000	20	4	Cab	5	Storage battery	.....	Planetary	Shaft	97	1,600
Mitchell, Model H	1,000	20	4	Runabout	2	Storage battery	Cone	Progressive	Shaft	92	1,650
Reo, Model C	1,000	18	2	Touring	4	Storage battery	Disc	Planetary	Chain	94	.....
Staver, Model C	1,000	18	2	Buggy	2	Storage battery	Disc	Planetary	Side chains	.....	1,600
Cameron, Model 8	1,050	16	4	Runabout	3	Storage battery	Cone	Progressive	Shaft	98	1,150
Buick, Model G	1,150	22	2	Touring	5	Storage battery	Cone	Planetary	Chain	90	.....
Autocar, Model XV	1,200	12	2	Runabout	3	Storage battery	Ring	Progressive	Shaft	80	.....
Reliable-Dayton, E	1,200	15	2	Coupe	2	Storage battery	External contracting	Progressive	Side chains	84	1,300
Auburn	1,250	24	2	Runabout	3	Storage battery	Disc	Planetary	Chain	100	1,700
Buick, Model F	1,250	22	2	Touring	5	Storage battery	Cone	Planetary	Single chain	90	.....
Jackson, Model C	1,250	20	2	Touring	5	Storage battery	Disc	Planetary	Chain	96	2,000
Mitchell, Model G	1,250	20	4	Runabout	3	Storage battery	Cone	Progressive	Shaft	92	1,650
Moline, Model H	1,250	18	2	Touring	5	Storage battery	Disc	Planetary	Chain	92	1,800
Overland, Model 24	1,250	18	4	Runabout	2	Storage battery	Expanding	Planetary	Shaft	96	1,590
Reo, Model A	1,250	18	2	Touring	5	Storage battery	Disc	Planetary	Chain	94	.....
Lambert, Model S	1,275	24	2	Touring	5	Storage battery	Disc	Friction	Side chains	94	1,800
Chalfant	1,300	22	2	Touring	5	Storage battery	.....	Planetary	Chain	90	.....
Auburn	1,350	20	4	Touring	5	Storage battery	Disc	Planetary	Chain	100	1,800
Cartercar, Model A	1,350	22	2	Touring	5	Storage battery	.....	Friction	Chain	96	1,860
Mason	1,350	15	2	Touring	5	.....	.....	.....	.....	.....	.....
Maxwell, Model N-C	1,350	16	2	Runabout	2	Storage battery	Disc	Progressive	Shaft	90	1,500
Cadillac, Model T	1,350	10	1	Coupe	2	Storage battery	Disc	Planetary	Chain	82	.....
Rambler, Model 32	1,300	22	2	Runabout	2	Storage battery	Disc	Planetary	Chain	106	1,850
Richmond	1,350	16	4	Runabout	2	Storage battery	Cone	Progressive	Shaft	90	1,575
Waltham, Model 138	1,350	15	2	Runabout	2	Dry cells	.....	Friction	Side chains	102	1,300
Atlas, Model R	1,400	22	2	Runabout	2	Storage battery	Disc	Planetary	Shaft	90	1,500
Rambler, Model 31	1,400	22	2	Touring	4	Storage battery	Disc	Planetary	Chain	106	1,850
Waltham, Model 158	1,400	14	2	Touring	5	Dry cells	.....	Friction	Side chains	92	1,385
Maxwell, Model H-C	1,450	16	2	Touring	5	Storage battery	Disc	Progressive	Shaft	90	1,500
Richmond	1,450	16	4	Lgt. Touring	4	Storage battery	Cone	Progressive	Shaft	90	1,700
Colt	1,500	40	6	Runabout	2	H. T. Magneto	Cone	Selective	Shaft	105	1,800
Aerocar, Model D	1,500	20	4	Touring	4	Storage battery	Disc	Progressive	Shaft	104	2,000
Jackson, Model D	1,500	20	2	Touring	5	Storage battery	Disc	Selective	Shaft	106	2,200
Eagle, Model O	1,550	20	3	Runabout	2	Storage battery	Disc	Progressive	Shaft	100	1,750
Northern, Model C	1,600	24	2	Touring	5	Storage battery	Disc	Planetary	Shaft	106	2,200
Eagle, Model N	1,700	20	3	Touring	4	Storage battery	Disc	Progressive	Shaft	100	1,750
Stoddard-Dayton, 8-H	1,700	18	4	Runabout	4	Storage battery	Cone	Selective	Shaft	92	1,500
Stoddard-Dayton, H-H	1,700	18	4	Coupe	2	Storage battery	Cone	Selective	Shaft	88	1,500
Elmore, Model L	1,750	24	3	Touring	5	Storage battery	Ring	Selective	Shaft	102	.....
Franklin, Model G	1,750	16	4	Runabout	2	Storage battery	Disc	Selective	Shaft	100	1,400
Maxwell, Model D	1,750	24	4	Touring	4	Storage battery	Disc	Progressive	Shaft	96	2,100
Waltham, T-T	1,750	20	4	Touring	5	Storage battery	Cone	Progressive	Shaft	96	1,800
Lane Steamer, Model 8-2	1,800	20	2	Runabout	2	.....	.....	.....	Chain	97	1,600
Waltham, Model D-L	1,800	20	4	Touring	5	Storage battery	Cone	Progressive	Shaft	96	1,850
Dragon	1,850	35	4	Runabout	2	Storage battery	Cone	Progressive	Shaft	96	1,600
Franklin, Model G	1,850	16	4	Touring	4	Storage battery	Disc	Selective	Shaft	90	1,600
Trebert	1,850	30	4	Touring	5	.....	.....	.....	.....	.....	.....
Pullman, Model H	1,875	24	4	Touring	5	Storage battery	Cone	Selective	Shaft	100	1,750
Atlas, Model D	1,900	34	3	Runabout	4	Storage battery	Cone	Selective	Shaft	106	2,000
Eagle, Model M	1,900	30	3	Touring	5	Storage battery	Disc	Progressive	Shaft	100	1,750
Oldsmobile, Model X	1,900	32	4	Touring	5	Storage battery	Cone	Selective	Shaft	106	.....

COSTING BETWEEN $2,000 AND $3,000

CAR	Price	H.P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheelbase	W'ght
Cadillac, Model G	$2,000	25	4	Touring	5	Storage battery	Disc	Selective	Shaft	100	2,180
Buick, Model D	2,000	24	4	Touring	5	Storage battery	Disc	Progressive	Shaft	102	2,250
Hay-Berg	2,000	20	4	Roadster	3	Storage battery	Cone	Progressive	Shaft	.....	2,000
Jackson, Model E	2,000	35	4	Runabout	4	Storage battery	Disc	Selective	Shaft	111	2,450
Lambert, Model M	2,000	35	4	Touring	5	Storage battery	Disc	Friction	Shaft	105	1,900
Kisselkar	2,000	35	4	Touring	7	Storage battery	Cone	Selective	Shaft	108	2,400
Kisselkar	2,000	35	4	Limousine	7	Storage battery	Cone	Selective	Shaft	108	2,800
Klink	2,000	30	4	Touring	5	Storage battery	Cone	Selective	Shaft	110	2,100
Lane Steamer, Model 8-5	2,000	20	2	Touring	5	.....	.....	.....	Chain	97	2,300
Mitchell, Model I	2,000	35	4	Touring	5	Storage battery	Cone	Progressive	Shaft	112	2,505
Moline, Model S	2,000	24	4	Touring	5	Storage battery	Cone	Progressive	Shaft	100	2,050
Pierce-Racine, Model E	2,000	30	4	Touring	5	Storage battery	Cone	Progressive	Shaft	.....	.....
Pungs-Finch, Model F	2,000	24	4	Runabout	2	Storage battery	Cone	Progressive	Shaft	100	1,600
Richmond	2,000	28	4	Touring	5	Storage battery	Cone	Selective	Shaft	108	1,950
Selden	2,000	25	4	Touring	5	Storage battery	Cone	Selective	Shaft	109	1,850
Shoemaker, Model B	2,000	28	4	Touring	5	Storage battery	Disc	Selective	Shaft	102	2,100
Blomstrom	2,100	30	4	Runabout	3	Storage battery	Cone	Selective	Shaft	.....	.....
Dragon	2,100	24	4	Touring	5	Storage battery	Cone	Progressive	Shaft	104	1,950
Aerocar, Model F	2,200	40	4	Touring	5	Storage battery	Disc	Progressive	Shaft	115	2,200
Napier	2,200	20	4	Runabout	2	Storage battery	Cone	Selective	Shaft	90	2,800
Blomstrom	2,250	30	4	Touring	5	Storage battery	Cone	Selective	Shaft	.....	.....
C-F	2,250	35	4	Touring	5	Storage battery	Disc	Selective	Shaft	114	2,300
Imperial	2,250	30	4	Runabout	3	H. T. Magneto	Disc	Selective	Shaft	108	2,400
Marion, Model 8	2,250	24	4	Roadster	3	H. T. Magneto	Disc	Selective	Shaft	102	1,850
Premier	2,250	24	4	Touring	5	Storage battery	Disc	Selective	Shaft	108	2,270
Rambler, Model 34	2,250	33	4	Touring	5	Storage battery	Cone	Selective	Shaft	112	2,400
Shoemaker, Model X	2,300	40	4	Roadster	2	Storage battery	Disc	Selective	Shaft	115	2,300
Mora	2,350	24	4	Runabout	3	H. T. Magneto	Cone	Selective	Shaft	98	1,750
Atlas, Model E	2,400	40	4	Touring	5	Storage battery	Cone	Selective	Shaft	114	2,400
Continental, Model A	2,400	20	4	Runabout	3	Storage battery	Disc	Selective	Shaft	100	2,000
White Steamer, Model L	2,400	20	2	Runabout	3	.....	.....	.....	Shaft	114	.....
Cadillac, Model H	2,500	30	4	Touring	5	Storage battery	Disc	Planetary	Shaft	102	2,880
Crawford, Model D	2,500	35	4	Runabout	3	Magneto	Disc	Selective	Shaft	113	2,300
Dolson, Model H	2,500	40	4	Touring	5	Storage battery	Band	Selective	Shaft	115	2,700
Dorris, Model C	2,500	30	4	Touring	5	Storage battery	Disc	Selective	Shaft	106	2,350
Elmore, Model M	2,500	35	4	Touring	5	Storage battery	Expanding ring	Selective	Shaft	108	.....
Frayer-Miller	2,500	24	4	Runabout	2	Storage battery	Cone	Selective	Shaft	100	1,800
Frayer-Miller, Combination	2,500	24	4	Combination	3-4	Storage battery	Cone	Selective	Shaft	100	2,000
Eagle	2,500	40	4	Runabout	3	H. T. Magneto	Disc	Selective	Shaft	100	2,250
Glide, Model G	2,500	36	4	Touring	5	Magneto	Disc	Selective	Shaft	120	2,900
Great Smith	2,500	30	4	Touring	5	Storage battery	Disc	Selective	Shaft	107	.....

CAR	Price	H.P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheelbase	W'ght
Grout	2,500	35	4	Touring	5	Storage battery	Cone	Progressive	Side chains	115	2,600
Haynes, Model S	2,500	30	4	Touring	5	Storage battery	Band	Selective	Shaft	102	2,250
Jackson, Model E	2,500	35	4	Touring	5	Storage battery	Disc	Selective	Shaft	111	2,450
Knox, Model H	2,500	30	4	Sportabout	5	Storage battery	Cone	Selective	Shaft	102	2,250
Speedwell, Model D	2,500	40	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	116	.....
Stevens-Duryea, Model R	2,500	20	4	Touring	5	Storage battery	Disc	Selective	Shaft	90	2,000
White Steamer, Model L	2,500	20	2	Touring	5	.....	.....	.....	Shaft	114	.....
Buick, No. 5	2,500	40	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	108	.....
Lambert, Model R	2,500	35	4	Touring	7	Storage battery	Disc	Friction	Side chains	106	2,700
Marion, Model 6-30	2,500	30	6	Roadster	2	H. T. Magneto	Disc	Selective	Shaft	102	1,900
Mora	2,500	24	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	103	1,900
Moline, Model A	2,500	35	4	Touring	5	Storage battery	Cone	Progressive	Shaft	110	2,650
Pierce-Racine	2,500	40	4	Touring	5	Storage battery	Cone	Selective	Shaft	106	2,600
Stoddard-Dayton, Model 8-f	2,500	30	4	Touring	5	Storage battery	Cone	Selective	Shaft	113	2,600
Model 8-N	2,500	30	4	Landaulet	5	Storage battery	Cone	Selective	Shaft	92	2,000
Pungs-Finch, Model H	2,500	35	4	Touring	5	Storage battery	Disc	Selective	Shaft	110	2,300
Shoemaker, Model C	2,500	40	4	Touring	5	Storage battery	Disc	Selective	Shaft	115	2,600
Wayne	2,500	30	4	Touring	5	Storage battery	Cone	Selective	Shaft	107	2,400
Knox	2,600	30	4	Touring	5	Storage battery	Cone	Selective	Shaft	102	2,250
Corbin, Model S	2,650	32	4	Roadster	4	H. T. Magneto	Cone	Selective	Shaft	108	.....
Model R (Air)	2,650	32	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	108	.....
Model K (Water)	2,650	32	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	108	.....
Crawford, Model E	2,650	35	4	Touring	5	Magneto	Disc	Selective	Shaft	106	2,800
Imperial	2,650	30	4	Runabout	4	H. T. Magneto	Disc	Selective	Shaft	108	2,525
Premier	2,650	30	4	Touring	5	L. T. Magneto	Disc	Selective	Shaft	108	2,400
Continental, Model B	2,700	35	4	Runabout	3	Magneto	Disc	Selective	Shaft	110	2,150
Knox, Model L (Water)	2,700	30	4	Touring	5	Storage battery	Cone	Selective	Shaft	102	2,400
Apperson, Model M	2,750	30	4	Roadster	4	H. T. Magneto	Band	Selective	Shaft	106	2,400
Autocar, Model XIV	2,750	30	4	Touring	5	Storage battery	Ring	Selective	Shaft	112	.....
Frayer-Miller, Model B	2,750	24	4	Touring	5	Storage battery	Internal expanding	Selective	Shaft	100	2,200
Hol-Tan, special (chassis only)	2,750	24	4	.....	.....	H. T. Magneto	Disc	Selective	Shaft	121	.....
Oldsmobile, Model M	2,750	36	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	112	2,800
Pope-Hartford, Model M	2,750	30	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	112	.....
Pullman, Model 6-30	2,750	30	6	Runabout	3	Storage battery	Cone	Selective	Shaft	104	1,800
Stevens-Duryea, Model X	2,750	24	4	Touring	5	Magneto	Disc	Selective	Shaft	124	2,600
Thomas Detroit, 4-40	2,750	40	4	Touring	5	Storage battery	Cone	Selective	Shaft	112	2,530
Eagle	2,800	40	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	110	2,400
Northern, Model C	2,800	24	2	Limousine	7	Storage battery	Disc	Planetary	Shaft	106	2,800
Franklin, Model D	2,850	28	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	105	2,200
Locomobile, Model E	2,900	24	4	Touring	5	L. T. Magneto	Cone	Selective	Side chains	102	2,000

COSTING BETWEEN $3,000 AND $4,000

CAR	Price	H.P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheelbase	W'ght
Cadillac, Model G	$3,000	25	2	imousine	5	Storage battery	Cone	Selective	Shaft	100	.....
Columbia, Model M-K	3,000	29	4	Touring	5	L. T. Magneto	Cone	Selective	Shaft	109	2,350
Continental, Model C	3,000	35	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	120	2,500
Haynes, Model W	3,000	45	4	Touring	5	H. T. Magneto	Band	Selective	Shaft	106	2,650
Hol-Tan	3,000	25	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	110	.....
Glide, Model 45	3,000	45	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	120	3,000
Jewel	3,000	40	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	117	.....
Lane, Steamer, 8-3	3,000	30	2	Runabout	2	.....	.....	.....	Chain	112	2,000
Marmon, Model G	3,000	35	4	Touring	5	Storage battery	Disc	Selective	Shaft	104	.....
Maxwell, Model M	3,000	40	4	Touring	5	Storage battery	Disc	Selective	Shaft	104	2,750
Thomas, 4-20	3,000	20	4	Landaulet	6	H. T. Magneto	Cone	Selective	Shaft	100	1,900
Pennsylvania, Model C	3,000	50	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	114	2,800
Pennsylvania	3,000	50	4	Limousine	5	H. T. Magneto	Cone	Selective	Shaft	114	.....
Pierce-Racine, Model E	3,000	30	4	Touring	5	Storage battery	Cone	Progressive	Shaft	106	2,350
Pullman, Model 4-40	3,000	40	4	Runabout	3	Storage battery	Cone	Selective	Shaft	108	2,200
Crawford, Model C	3,150	40	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	114	2,800
Selden	3,200	25	4	Limousine	5	Storage battery	Cone	Selective	Shaft	109	2,000
White Steamer, Model L	3,200	20	2	Limousine	5	.....	.....	.....	Shaft	104	.....
American	3,250	40	4	Touring	5	H. T. Magneto	Cone	Progressive	Shaft	106	.....
Dolson, Model F	3,250	60	4	Touring	7	Storage battery	Band	Selective	Shaft	127	3,200
Gearless, Model 60	3,250	60	4	Runabout	3	H. T. Magneto	Expanding	Gearless	Shaft	126	3,000
Moon, Model C	3,250	30	4	Roadster	3	L. T. Magneto	Disc	Selective	Shaft	110	2,500
Pullman, Model 1	3,250	40	4	Touring	5	Storage battery	Cone	Selective	Shaft	118	3,000
Stevens-Duryea, Model R	3,300	20	4	Limousine	5	Storage battery	Disc	Selective	Shaft	90	2,300
Acme, Model XXI	3,500	30	4	Touring	5	H. T. Magneto	Cone	Selective	Side chains	102	2,750
American Mors	3,500	30	4	Landaulet	5	L. T. Magneto	Cone	Selective	Side chains	103	2,100
Carter Two-Engine	3,500	24–60	8	Touring	7	Storage battery	Cone	Selective	Shaft	111	2,100
Corbin, Model R	3,500	32	4	Limousine	5	H. T. Magneto	Cone	Selective	Shaft	108	.....
Cleveland	3,500	40	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	122	.....
Frayer-Miller, Model C	3,500	50	4	Touring	7	H. T. Magneto	Internal expanding	Selective	Shaft	122	3,000
Knox, Model H (Air)	3,500	30	4	Limousine	5	Storage battery	Cone	Selective	Shaft	102	2,675
Northern, Model L	3,500	40	4	Touring	7	Storage battery	Cone	Progressive	Shaft	119	3,100
Pierce-Racine	3,500	40	4	Limousine	7	Storage battery	Cone	Selective	Shaft	106	3,150
Stevens-Duryea, Model U	3,500	35	6	Touring	5	Storage battery	Disc	Selective	Shaft	114	2,500
Studebaker, Model A	3,500	27	4	Touring	5	L. T. Magneto	Cone	Progressive	Shaft	104	.....
Silent Knight	3,500	40	.....	Touring	5	Storage battery	.....	Progressive	Shaft	112	2,400
White Steamer, Model K	3,500	30	2	Runabout	3	.....	.....	.....	Shaft	105	.....
Gaeth, Model XV	3,500	35	4	Touring	7	L. T. Magneto	Band	Progressive	Shaft	112	2,700
Garford, Model A	3,500	30	4	Touring	5	L. T. Magneto	Cone	Progressive	Shaft	104	2,500
Gearless	3,500	60	4	Touring	5	H. T. Magneto	Expanding	Gearless	Shaft	106	3,250
Glide, Model H	3,500	54	6	Touring	5	H. T. Magneto	Disc	Selective	Shaft	132	4,000
Lane Steamer, Model 8-7	3,500	30	2	Touring	7	.....	.....	.....	Chain	119	3,500
Marmon, Model H	3,500	35	4	Touring	5	Storage battery	Disc	Selective	Shaft	114	.....
Marmon, Model H (water)	3,500	40	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	114	.....
Mora Racytype	3,500	42	6	Runabout	3	H. T. Magneto	Cone	Selective	Shaft	105	2,250
National, Model K	3,500	.....	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	112	.....
Cadillac, Model H	3,600	30	4	Limousine	7	Storage battery	Disc	Planetary	Shaft	102	.....
Crawford, Model F	3,600	50	4	Touring	7	Magneto	Disc	Selective	Shaft	118	3,000
Mora Tourer	3,600	42	6	Touring	5	H. T. Magneto	Cone	Selective	Shaft	114	2,500
White Steamer, Model K	3,700	30	2	Touring	7	.....	.....	.....	Shaft	102	.....
Autocar, Model XIV	3,750	30	4	Touring	5	Storage battery	Ring	Selective	Shaft	112	.....
Haynes, Model U	3,750	60	4	Touring	7	H. T. Magneto	Band	Selective	Shaft	118	3,000
Moon, Model D	3,750	30	4	Touring	7	L. T. Magneto	Disc	Selective	Shaft	121	2,800
National, Model N	3,750	.....	4	Roadster	2	Magneto	Cone	Selective	Shaft	102	.....
Premier	3,750	45	6	Touring	7	L. T. Magneto	Disc	Selective	Shaft	124	3,000
Pullman, Model J	3,750	40	4	Touring	7	Storage battery	Cone	Selective	Shaft	118	3,200
Stoddard-Dayton, Model 8-F	3,750	30	4	Limousine	5	Storage battery	Cone	Selective	Shaft	118	3,000
Oldsmobile, Model M	3,800	36	4	Limousine	7	H. T. Magneto	Cone	Selective	Shaft	122	.....
Allen-Kingston, Model D	3,900	40	4	Runabout	4	H. T. Magneto	Disc	Selective	Shaft	121	3,100

COSTING BETWEEN $4,000 AND $5,000

CAR	Price	H.P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheelbase	W'ght
Acme, Model XVIII	$4,000	30	4	Touring	7	H. T. Magneto	Cone	Selective	Side chains	115	3,500
Allen-Kingston, Model C	4,000	40	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	106	3,300
American Mors	4,000	40	4	Touring	7	L. T. Magneto	Cone	Selective	Side chains	120	3,360
American Simplex	4,000	50	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	117	2,800
C. V. I., Model A	4,000	40	5	Touring	5	H. T. Magnet	Cone	Selective	Shaft	117	2,600
D. L. G.	4,000	35	6	Runabout	3	H. T. Magneto	Disc	Selective	Shaft	113	2,000
Frayer-Miller	4,000	36	6	Touring	5	Storage battery	Internal expanding	Selective	Shaft	120	2,750
Frontenac	4,000	40	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	124	3,300
Garford, Model B	4,000	40	4	Touring	7	L. T. Magneto	Cone	Selective	Shaft	114	2,750
Franklin, Model H	4,000	42	6	Touring	7	H. T. Magneto	Disc	Selective	Shaft	127	2,500
Gearless	4,000	75	6	Touring	6	Magneto	Expanding	Gearless	Shaft	126	3,450
Knox, Model G (Air)	4,000	35	4	Touring	7	H. T. Magneto	Cone	Selective	Side chains	112	2,800
Lozier, Model G	4,000	40	4	Touring	7	H. T. Magneto	Disc	Selective	Side chains	117	3,150
Oldsmobile, Model M	4,000	36	4	Landaulet	7	H. T. Magneto	Cone	Selective	Shaft	112	.....
Payne-Modern	4,000	36	6	Touring	5	Storage battery	Cone	Progressive	Shaft	118	2,840
Royal Tourist	4,000	45	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	114	.....
Studebaker, Model B	4,000	36	4	Touring	7	L. T. Magneto	Cone	Selective	Shaft	114	.....
Apperson, Model K	4,200	50	4	Touring	7	H. T. Magneto	Band	Selective	Side chains	114	3,200
Columbia, Model 48-2	4,200	29	4	Limousine	5	L. T. Magneto	Cone	Selective	Shaft	115	2,750
Locomobile	4,200	20	4	Limousine	4	L. T. Magneto	Cone	Selective	Side chains	116	2,600
Oldsmobile, Model Z	4,200	48	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	103	3,200
Packard "Thirty"	4,200	30	4	Touring	7	H. T. Magneto	Band	Progressive	Shaft	123	2,950
Studebaker, Model H	4,200	27	4	Limousine	7	L. T. Magneto	Cone	Progressive	Shaft	104	.....
National, Model R	4,200	.....	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	116	.....
American Mors	4,250	40	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	107	3,500
Speedwell, Model B	4,250	60	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	132	.....
Peerless	4,300	30	4	Touring	7	H. T. Magneto	Band	Selective	Shaft	118	.....
Austin, Model LX-T	4,500	60	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	124	3,600
Acme, Model XX	4,500	45	6	Touring	5	H. T. Magneto	Cone	Selective	Side chains	126	3,500
Cleveland	4,500	40	4	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	122	.....
Crawford, Model F	4,500	50	4	Limousine	7	Magneto	Disc	Selective	Shaft	118	3,400
Rainier, Model D	4,500	45	4	Touring	7	L. T. Magneto	Disc	Selective	Shaft	119	2,850
Stoddard-Dayton, Model 8-G	4,500	50	6	Touring	5	H. T. Magneto	Cone	Selective	Shaft	128	3,500
Stevens-Duryea, Model U	4,500	35	5	Limousine	7	Storage battery	Disc	Selective	Shaft	114	2,860
Thomas Flyer	4,500	60	4	Touring	7	H. T. Magneto	Disc	Selective	Side chains	127	3,200
White Steamer, Model K	4,500	30	2	Limousine	7	.....	.....	.....	Shaft	116	.....
Welch, Model 4-L	4,500	50	4	Touring	5	H. T. Magneto	Individual	Selective	Shaft	128	3,150
Winton, Six-Teen-Six	4,500	48	6	Touring	7	H. T. Magneto	Disc	Selective	Shaft	120	.....
D. L. G.	4,500	35	6	Touring	7	H. T. Magneto	Disc	Selective	Shaft	130	.....
Stearns	4,600	30	4	Light Touring	4	H. T. Magneto	Expanding	Selective	Side chains	120	2,800
Packard "Thirty"	4,700	30	4	Touring	7	H. T. Magneto	Band	Progressive	Shaft	123	.....
Locomobile	4,750	40	4	Touring	7	L. T. Magneto	Cone	Selective	Side chains	123	3,000
Pope-Toledo, Model XVII	4,750	50	4	Touring	7	H. T. Magneto	Disc	Selective	Side chains	126	.....
Shawmut, Model A	4,750	40	4	Roadster	3	H. T. Magneto	Disc	Selective	Shaft	108	2,675
Stearns	4,750	30	4	Pullman	7	H. T. Magneto	Expanding	Selective	Side chains	120	3,200
National, Model M	4,800	.....	4	Limousine	7	H. T. Magneto	Cone	Selective	Shaft	112	.....

COSTING BETWEEN $5,000 AND $6,000

CAR	Price	H.P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheelbase	W'ght
Allen-Kingston, Model E	$5,000	40	4	Limousine	5	H. T. Magneto	Disc	Selective	Shaft	126	.....
Apperson Jack Rabbitt	5,000	50	4	Runabout	2	H. T. Magneto	Band	Selective	Side chains	105	2,200
Apperson, Model S	5,000	50	6	Touring	7	H. T. Magneto	Band	Selective	Side chains	.....	.....
De Luxe	5,000	40	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	121	.....
Ellsworth (chassis only)	5,000	40	4	.....	.....	H. T. Magneto	Disc	Selective	Side chains	120	.....
Frontenac	5,000	40	4	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	124	3,600
Lozier, Model H	5,000	45	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	124	3,200
Menges	5,000	60	4	Touring	8	H. T. Magneto	.....	.....	Shaft	122	2,800
Pierce	5,000	40	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	124	.....
Royal Tourist	5,000	45	4	Limousine	7	H. T. Magneto	Cone	Selective	Shaft	114	.....
National, Model T	5,000	.....	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	127	.....
Shawmut, Model B	5,000	40	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	112	3,000
Walter	5,000	44	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	120	.....
Franklin, Model H	5,200	42	6	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	127	2,700
Austin, Model LX-R	5,500	60	4	Combination	4	H. T. Magneto	Disc	Selective	Shaft	124	3,400
Model LX-L	5,500	60	4	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	124	3,800
Allen-Kingston, Model F	5,500	40	4	Limousine	5	H. T. Magneto	Disc	Selective	Shaft	126	.....
Chadwick	5,500	50	6	Touring	7	H. T. Magneto	Cone	Selective	Side chains	124	2,800
Matheson	5,500	45	4	Touring	7	L. T. Magneto	Disc	Selective	Side chains	128	3,400
Peerless	5,500	30	4	Limousine	7	H. T. Magneto	Band	Selective	Shaft	119	.....
Pierce Small Six	5,500	40	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	130	.....
Rainier	5,500	45	4	Limousine	7	L. T. Magneto	Disc	Selective	Shaft	110	.....
Selden	5,500	45	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	123	3,500
Welch, Model 4-I	5,500	50	4	Limousine	5	H. T. Magneto	Individual	Selective	Shaft	128	3,400
Winton Six-teen-Six	5,500	48	6	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	120	.....
Packard "Thirty"	5,600	30	4	Limousine	7	H. T. Magneto	Band	Progressive	Shaft	123	.....
Packard "Thirty"	5,700	30	4	Landaulet	7	H. T. Magneto	Band	Progressive	Shaft	123	.....
Shawmut, Model B	5,750	40	4	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	108	.....
Stearns	5,750	30	4	Limousine	7	H. T. Magneto	Expanding	Selective	Side chains	120	3,600
Peerless	5,800	30	4	Landaulet	7	H. T. Magneto	Expanding	Selective	Shaft	118	.....

COSTING $6,000 AND ABOVE

CAR	Price	H.P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheelbase	W'ght
American Locomotive	$6,000	22	4	Limousine	7	L. T. Magneto	Disc	Selective	Shaft	112	3,000
Austin, Model XC-R	6,000	90	6	Combination	4	H. T. Magneto	Disc	Selective	Shaft	134	3,600
Austin, Model XC-T	6,000	90	6	Touring	6	H. T. Magneto	Disc	Selective	Shaft	134	2,800
Lozier, Model I	6,000	50	6	Touring	7	H. T. Magneto	Disc	Selective	Shaft	121	3,425
Peerless	6,000	60	6	Touring	7	H. T. Magneto	Band	Selective	Shaft	134	.....
Stevens-Duryea, Model S	6,000	50	5	Touring	7	Storage battery	Disc	Selective	Shaft	102	3,700
Thomas Special	6,000	70	6	Touring	7	H. T. Magneto	Disc	Selective	Side chains	136	3,500
Tincher	6,000	50	4	Touring	7	H. T. Magneto	Band	Selective	Side chains	127	3,000
Welch, Model 6-L	6,000	70	6	Touring	5	H. T. Magneto	Individual	Selective	Shaft	138	3,450
Pierce	6,250	40	4	Suburban	7	H. T. Magneto	Cone	Selective	Shaft	124	.....
Stearns	6,250	45	6	Light Touring	4	H. T. Magneto	Expanding	Selective	Side chains	133	3,000
Simplex	6,300	50	4	Touring	7	H. T. Magneto	Disc	Selective	Side chains	124	2,600
American Locomotive	6,500	40	4	Touring	7	L. T. Magneto	Disc	Selective	Side chains	126	3,250
Columbia, Model 66-3	6,500	48	4	Touring	7	H. T. Magneto	Electric	Electric	Shaft	134	3,650
Matheson	6,500	45	4	Limousine	7	L. T. Magneto	Disc	Selective	Side chains	128	3,600
Napier	6,500	60	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	126	3,400
Pierce	6,500	60	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	135	.....
Shawmut, Model D	6,500	40	4	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	126	.....
Austin, Model XC-L	7,000	90	6	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	134	4,000
Welch, Model 6	7,000	70	6	Limousine	5	H. T. Magneto	Individual	Selective	Shaft	138	3,750
American Locomotive	7,500	60	6	Touring	7	H. T. Magneto	Disc	Selective	Side chains	136	3,600
American Mercedes	7,500	45	4	Touring	7	L. T. Magneto	Disc	Selective	Side chains	.....	.....
Apperson, Model X	7,500	96	4	Runabout	2	H. T. Magneto	Band	Selective	Side chains	110	.....
Columbia, Model 66-3	8,500	48	4	Limousine	7	H. T. Magneto	Electric	Electric	Shaft	124	3,850
American Mercedes	10,000	70	4	Demi-Lim'ne	7	L. T. Magneto	Disc	Selective	Side chains	122	.....

ELECTRIC PLEASURE VEHICLES

CAR	Price	Motors	Cells	Body	Seats	Drive	Wheel-base	Weight
Studebaker	$1,350	.....	28	Runabout	2	Side chains	67	1,875
Studebaker	1,400	.....	28	Stanhope	2	Side chains	67	1,875
Babcock	1,500	1	36	Roadster	2	Side chains	78	1,600
Pope-Waverley	1,425	.....	30	Runabout	2	.....	69	.....
Pope-Waverley	1,500	.....	30	Runabout	2	.....	69	.....
Pope-Waverley	1,600	.....	30	Victoria	2	.....	68	.....
Studebaker	1,750	1	28	Victoria	2	Side chains	68	2,000
Babcock	1,700	1	36	Victoria	2	Side chains	78	1,700
Babcock	1,800	2	40	Stanhope	2	Gear	66	1,900
Baker	1,800	1	24	Victoria	2	Single chain	70	.....
Detroit	1,800	1	24	Stanhope	2	Side chains	.....	.....
Detroit	1,850	1	24	Stanhope	2	Side chains	.....	.....
Rauch & Lang	1,850	.....	24	Stanhope	2	Side chains	74	1,800
Baker	2,000	1	28	Suburban	2	Shaft	82	.....
Pope-Waverley	2,000	1	30	Victoria	2	.....	68	.....
Rauch & Lang	2,050	1	24	Stanhope	2	Side chains	74	2,250
Babcock	2,100	1	36	Coupe	2	Side chains	78	1,950
Rauch & Lang	2,100	1	24	Coupe	2	Side chains	74	1,950
Baker	2,200	1	24	Coupe	3	Single chain	70	.....
Detroit	2,250	1	24	Coupe	2	Side chains	.....	.....
Rauch & Lang	2,400	1	24	Coupe	4	Side chains	74	2,350
Baker	2,500	1	40	Roadster	3	Shaft	95	.....
Baker	3,000	1	28	Coupe	2	Shaft	92	.....
Rauch & Lang	3,000	1	24	Surrey	5	Side chains	103	3,300
Rauch & Lang	3,200	1	24	Victoria	5	Side chains	103	3,300
Babcock	4,000	2	40	Brougham	7	Gear	72	3,000
Baker	4,000	1	40	Brougham	4	Shaft	89	.....
Rauch & Lang	4,000	1	24	Brougham	6	Side chains	115	3,800
Columbus	.....	.....	.....	Stanhope	2	Side chains	69	.....
Columbus	.....	.....	.....	Victoria	2	Side chains	69	.....
Columbus	.....	.....	.....	Coupe	2	Side chains	69	.....
Columbus	.....	.....	.....	Surrey	4	Side chains	89	.....

GASOLINE COMMERCIAL VEHICLES

CAR	Price	H.P.	Cyl-inders	Body	Capacity	Ignition	Clutch	Transmission	Drive	Wheel-base	W'ght
Brush, Model 1-C	$550	6	1	Delivery	.....	Storage battery	Cone	Planetary	Side chains	75	1,000
Waltham, Model D-C	650	8	2	Delivery	.....	Storage battery	.....	Friction	Side chains	89	750
Brush, Model 2-B	800	12	2	Delivery	.....	Storage battery	Cone	Planetary	Side chains	88	1,300
Cadillac, Model M	1,000	10	1	Delivery	500 lbs.	Storage battery	Disc	Planetary	Chain	75	.....
Cartercar, Model C	1,350	22	2	Delivery	.....	Storage battery	Disc	Planetary	Chain	96	1,900
Waltham, Model 178D	1,375	14	2	Express	1,000 lbs.	Storage battery	.....	Friction	Side chains	92	1,100
Model 178A	1,425	14	2	Delivery	1,000 lbs.	Storage battery	.....	Friction	Side chains	92	1,100
Model 178C	1,450	14	2	Parcel Car	1,000 lbs.	Storage battery	.....	Friction	Side chains	92	1,100
Gaeth, Model K	1,500	12	1	Delivery	.....	Storage battery	Band	Planetary	Side chains	103	2,000
Hewitt	1,600	10	1	Delivery	.....	Storage battery	.....	Planetary	Chain	84	1,400
Rapid, Model E-11	1,700	24	2	Delivery	2,000 lbs.	Storage battery	Cone	Planetary	Chain	86	.....
Logan, Model R	1,800	20	4	Delivery	1,500 lbs.	Storage battery	Ring	Selective	Side chains	96	2,300
Franklin	1,850	16	4	Delivery	1,000 lbs.	Storage battery	Disc	Selective	Shaft	.....	.....
Reliable-Dayton, G	1,975	18	2	Delivery	.....	Storage battery	External contr'ng.	Progressive	Side chains	93	1,800
Franklin	2,000	16	4	Truck	2,000 lbs.	Storage battery	Disc	Selective	Worm	.....	.....
Meiselbach	2,000	28	2	Any	2,000 lbs.	.....	.....	Friction	.....	108	3,800
Mitchell	2,000	20	4	Truck	3,000 lbs.	H. T. Magneto	Cone	Progressive	Shaft	110	2,200
Rapid, E-132	2,000	24	2	Sight-seeing	12 pass'g'rs	Storage battery	Cone	Planetary	Side chains	90	.....
Logan, Model T	2,250	20	4	Any	2,000 lbs.	Storage battery	Ring	Selective	Side chains	96	2,700
Plymouth, Model G	2,250	40	4	Any	4,000 lbs.	Storage battery	.....	Friction	Side chains	103	3,800
Plymouth, Model G-S	2,300	40	4	'Bus	16-20 pass.	Storage battery	.....	Friction	Side chains	120	3,600
Meiselbach	2,500	28	2	Any	4,000 lbs	.....	.....	Friction	.....	108	5,000
Rapid, E-182	2,500	30	2	Sight-seeing	12 pass'g'rs	Storage battery	Cone	Planetary	Side chains	90	.....
Sayers & Scovill	2,500	25	4	Commercial	3,000 lbs.	Storage battery	Disc	Selective	Side chains	100	2,600
Knox, D-6	2,800	16	2	Express	3,000 lbs.	Dry cells	Disc	Planetary	Side chains	100	3,700
Reliance-Detroit, Model G	2,750	30	2	Any	4,000 lbs.	Storage battery	Cone	Progressive	Side chains	108	3,500
Frayer-Miller	3,000	24	4	Truck	5,000 lbs.	Storage abttery	Internal expand'g.	Selective	Side chains	.....	2,000
Meiselbach	3,000	28	2	Any	6,000 lbs.	Storage battery	.....	Friction	.....	108	.....
Thomas, E. R	3,000	16	4	Cab	5 passeng's.	H. T. Magneto	Cone	Selective	Shaft	.....	1,800
Gifford-Pettit	3,500	40	4	Truck	8,000 lbs.	L. T. Magneto	Cone	Selective	Shaft	120	4,800
Logan, Model S	3,500	40	4	Any	6,000 lbs.	Storage battery	Disc	Selective	Side chains	120	4,600
Reliance-Detroit	3,500	45	3	Any	5,000 lbs.	Storage battery	Cone	Progressive	Side chains	130	4,500
Rapid, E-145	4,000	30	2	Sight-seeing	25 pass'g'rs	Storage battery	Cone	Planetary	Side chains	111	.....
Knox, Model H	4,200	30	4	Truck	6,000 lbs.	Dry cells	Cone	Selective	Side chains	111	4,800
Reliance-Detroit	4,400	60	4	Truck	8,000 lbs.	H. T. Magneto	Cone	Progressive	Side chains	136	5,500
Hewitt	4,500	30	4	Any	10,000 lbs.	H. T. Magneto	.....	Planetary	Side chains	138	6,400
Manhattan	5,100	50	4	Truck	10,000 lbs.	H. T. Magneto	Cone	Selective	Side chains	168	.....
Manhattan	5,500	50	4	'Bus	20 pass'g'rs	H. T. Magneto	Cone	Selective	Side chains	156	.....
Manhattan	5,500	50	4	'Bus	22 pass'g'rs	H. T. Magneto	Cone	Selective	Side chains	158	.....

ELECTRIC COMMERCIAL VEHICLES

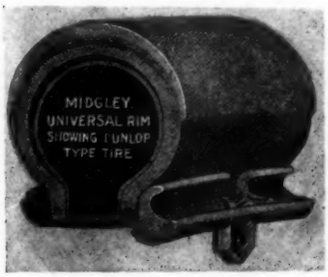
CAR	Motors	Cells	Body	Capacity	Drive	Weight
Baker	1	....	Any	.....	Side chains	3,000
Couple-Gear, A	4	....	Truck	10,000 lbs.	Direct	10,000
Couple-Gear, E	4	....	Truck	2,000 lbs.	Direct	3,500
Commercial	4	42	Truck	10,200 lbs.	Gear	.....
Commercial	4	42	Sight-seeing	30-passenger	Gear	.....
Commercial	4	44	Truck	8,000 lbs.	Gear	.....
General Vehicle Co	2	44	'Bus	.....	Chain	.....
General Vehicle Co	2	44	Wagon	1,000 lbs.	Chain	.....
General Vehicle Co	2	44	Truck	4,000 lbs.	Chain	.....
General Vehicle Co	2	44	Truck	10,000 lbs.	Chain	.....
Pope-Waverley	1	42	Ambulance	10-passenger	Side chains	.....
Pope-Waverley	1	42	Truck	2,000 lbs.	Side chains	.....
Pope-Waverley	2	40	Truck	2,500 lbs.	Side chains	.....
Pope-Waverley	2	42	Truck	10,000 lbs.	Side chains	.....

CAR	Motors	Cells	Body	Capacity	Drive	Weight
Pope-Waverley	1	42	Delivery	1,200 lbs.	Side chains	.....
Pope-Waverley	2	42	Truck	6,000 lbs.	Side chains	.....
Pope-Waverley	1	42	'Bus	12-passenger	Side chains	.....
Studebaker	2	....	Delivery	1,000 lbs.	Side chains	.....
Studebaker	2	....	Truck	2,500 lbs.	Side chains	.....
Studebaker	2	....	Truck	4,000 lbs.	Side chains	.....
Studebaker	2	....	Truck	7,000 lbs.	Side chains	.....
Studebaker	2	....	Truck	10,000 lbs.	Side chains	.....
McCrea Co	2	44	Truck	12,000 lbs.	Chain	.....
McCrea Co	1	22	Delivery	1,000 lbs.	Side chains	.....
Lansden	1	....	Delivery	4,000 lbs.	Side chains	.....
Lansden	1	....	Delivery	2,000 lbs.	Side chains	.....
Lansden	1	....	Truck	1,000 lbs.	Side chains	.....
Lansden	1	....	Truck	6,000 lbs.	Side chains	.....

QUICK-CHANGE TIRES TO THE FORE

By W. F. BRADLEY.

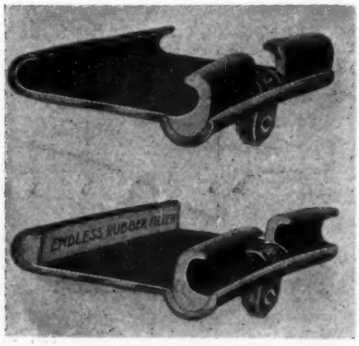
THERE was a time when it used to be a pleasure to the automobilist to "fix things." There was as much satisfaction in surmounting difficulties which cropped up from time to time as was obtained in a smooth, easy-going ride; indeed, half the pleasure of motoring came from a knowledge that you had been able, despite an inherent cussedness of the thing, to keep the machine going. That heroic phase of the sport passed away some years ago, and the motorist to-day is apt to be as unreasonable when something goes wrong as he was cheerful at more youthful seasons. Even tire troubles are not accepted with anything like the same degree of resignation as formerly, the ominous hiss of escaping air generally being greeted with a muttered curse instead of the whistling of a cheerful air as the driver pulls off his coat.



MIDGLEY RIM WITH DUNLOP

Some day, doubtless, punctures will become as extinct as the dodo; while waiting for the good time coming the automobilist who no longer loves to tinker is accepting quick-changing devices with gratitude and giving thanks for blessings to come. Whereas quick-change tires were formerly treated as an accessory and were always paid for extra by the purchaser of a car, they now form part of the standard equipment of nearly all the higher-priced automobiles. At the Madison Square show about 60 per cent. of the cars were shown with some of the better-known quick-change rims as the standard equipment; doubtless, too, most of those firms in the minority would include any of the standard devices without extra charge if requested to do so by a customer. The 1908 season is remarkable for the unanimity with which the industry has accepted the inventions of the tire firms for facilitating changing of tires.

Of the two classes before the public—quick-detachable and dismountable or demountable, as they are variously called—the former is by far the most popular for ordinary use. While making the changing of a tire much more simple and less arduous, it has the advantage of not requiring the carrying of any extra parts and adds nothing to the weight of the wheel. Some care has still to be taken in fitting the inner tube and the pump has to be brought into use; with a mechanical pump or a really portable compressed air tank, such as is promised already, the standard types of quick-detachable rims at present on the market would be practically perfect and would leave little room for the dismountable for ordinary touring. For speed work the dismountable rim is undoubtedly superior; when a change of tire is necessary the wheel is jacked up, half a dozen nuts slackened, rim and tire pulled off together, a new rim with previously inflated tire substituted, the nuts tightened up again, and the journey continued. Carrying a spare rim and inflated tire adds to the weight of the car, and is consequently not looked upon with full favor by the average automobilist. There seems to be an impression, too, that the dismountable type is not altogether safe, though how unfounded this fear is long-distance speed tests have clearly proved, speeds of over seventy miles an hour having been maintained by cars fitted with all the prominent makes of dismountables without any weakness being developed. As it becomes better known, and is brought more prominently before the public by the manufacturers, doubtless the dismountable will run the quick-change type of tire closely for popular favor; at present, however, tourists are most closely interested in the appliances designed to allow of tires being changed with increased facility by the removal of the outer bead or clincher, and are prepared to do work on the road whenever necessary, provided it does not call for much physical effort or demand any special skill.



TWO TYPES OF MIDGLEY RIMS

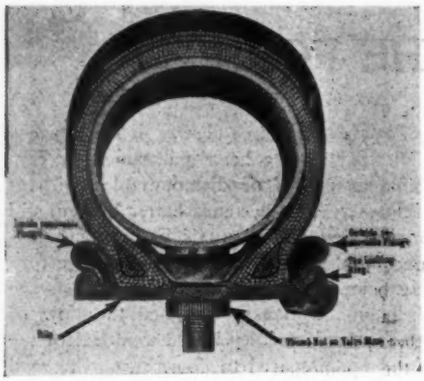
Some Standard Types of Quick-change Rims.

Having been adopted by such well-known tire firms as G & J, Hartford, and Morgan & Wright, and forming the standard equipment of many automobile manufacturers, the Midgley universal rim has secured a strong position in the world of quick-detachables. Instead of the outer clincher forming an integral part of the rim, it is a separate ring, fitting in a groove on the outer edge of the rim, with its two ends united by a turnbuckle. A glance at the illustration shows the simplicity of the arrangement and its ease of manipulation, all that is necessary to dismount or remount the bead being a few turns of the improved turnbuckle, the only tool needed being a little crank wrench. When required for Dunlop tires, the inner clip is filled with an endless band of rubber and the outer ring is reversed, the method of fastening remaining unchanged.

SECTIONAL VIEW MARSH RIM.

In the Marsh rim, now manufactured and marketed by the Diamond Rubber Company, the mode of attachment is a removable steel flange and a split locking ring with a curved lip fitting snugly over the projecting base plate. A wedge-shaped piece of metal fits into place between the open tapered ends of the ring, spreading it so that there is no possibility of it coming off. To give still further security the keystone locking part is itself held in place by being attached to a bolt on the main rim body and held there by a nut. An open end wrench is supplied for pulling off the locking ring when the wedge plate has been removed; the tool is not absolutely necessary, however, for with the removal of the wedge the split ring can be forced off without difficulty by inserting the point of a screwdriver. With the Diamond wrapped tread tires no stay bolts are required for use with the detachable rim, and the operation of changing an ordinary tire by a person with moderate experience need not exceed five minutes. When any regular clincher tires made for one-piece rims are employed, however, stay bolts become a necessity. Interchangeable rings are provided, by the use of which Dunlop type of tires can be used with the Marsh rim, the labor of attaching or detaching being substantially the same as for the clincher

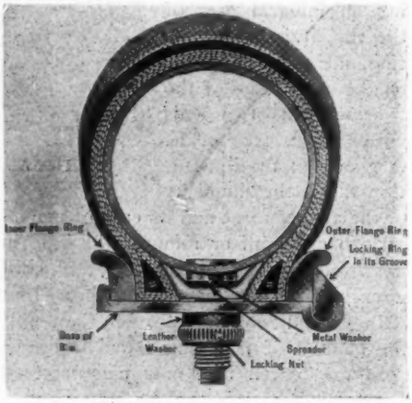
DETAILS OF MARSH.



GOODYEAR RIM AND SPREADER.

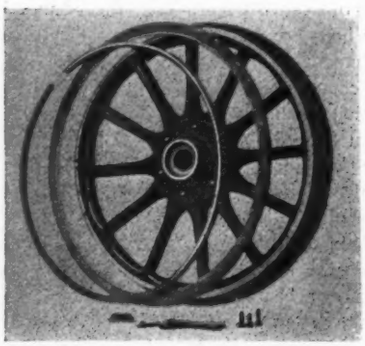
type shown in cut.

The universal rim produced by the Goodyear Tire and Rubber Company consists of a rolled steel base and two flanges in the form of rings or hoops to slide on and off the base. The inner ring is held by the raised edge of the base, while a locking ring, split at one point to permit of spreading it, fits into a groove or channel on the outer edge of the plate, thus securing the outer ring. A spreader plate attached to the valve stem is the only locking arrangement, the screwing up of a rim nut pressing the flange against the split portion of the locking ring so that it cannot be lifted out or removed from the channel by any strain whatever. The single nut on the valve stem being the only fastener, no tool is required for use with this rim; it will be obvious that the thumb nut on the valve stem must be maintained tightly secured up to insure safety. This is guaranteed by the valve cap, which, when in position, acts as a check nut. One of the claims of the Goodyear rim is that it is absolutely impossible to rim cut when running flat, for the flanges are round instead of sharp, and form the arc of a two-inch circle. By substituting clincher flanges in place of those shown in the illustration, the universal rim can be used for Goodyear clincher or any standard G & J tire.



SECTIONAL VIEW OF FIRESTONE RIM.

In the Fisk mechanically fastened tire there are structural differences in the casings which are not found in other types. The base of the tire is flat, formed of a tough, heavy cushion of rubber and fabric composition. This flat base rests on a steel rim, with a corresponding flat surface, and is secured there by two wedge-shaped galvanized steel rings, which set in over the rubber base head. The rims are secured in place by galvanized clamps and bolts passing through the felloe, which grip them solidly to the flat rim, the tire and rim then being as one piece of mechanism, impossible to loosen accidentally.



COMPONENT PARTS OF REPUBLIC.

In the Firestone universal rim is another example of the class adopting a fixed steel base with a raised inner edge and a groove or channel on the outer edge. A couple of flange rings slide onto this, the inner being held by the projecting edge and the outer one by the locking ring, equipped with a hole at each end to slip over a couple of pins projecting from the flange. On the valve stem is a metal plug or spreader, which fits into the base of the channel, thus holding apart the walls of the tire and the two removable rings. When Firestone clinchers are to be used, all that is necessary is to change the flange rings for those of clincher type. Standard clincher tires can be used with the rim by drilling the felloe and equipping with stay bolts.

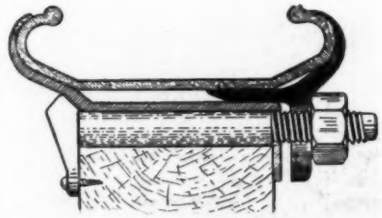
The Republic detachable rim, intended specially for use with the Republic tire, has certain peculiarities in the design of the removal bead and locking ring, as well as in the base of the tire easing. This latter forms a perfectly cylindrical tube, without any crevice or crack in which the inner tube can be pinched. The locking ring is of U section, made to fit over the turned-down edge of the base plate and the heel of the removable flange; a wedge-shaped key piece is inserted in the split ring and secured by three cap screws.

MICHELIN DISMOUNTABLE RIM.

Distinctive in the Goodrich quick-detachable tire is the securing of the split ring by two substantial hooks of almost square section. These ends are dropped into the longer and innermost holes of a slot on the base plate, then forced outward into the smaller ones, which they completely fill. A special tool is provided for this purpose. The dust cap for the valve is made to act as a retainer, so that the tire does not creep and is prevented from being blown off, whether inflated or otherwise.

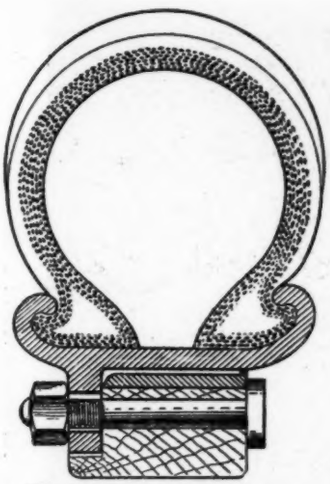
Some of the Leaders in the Dismountable Field.

In the six or seven types of dismountable rims now on the market the problem has not been to produce a new method of attaching the tire to the rim, but to produce a double rim, one fitting over the other, which would give the maximum safety with minimum weight. The tire and method of attaching it to the rim are in no way changed, the usual clincher attachment being almost universal. Naturally some provision had to be made for the stay bolts, as well as for the valves, for it was manifestly impossible to fix a dismountable rim over the wheel with these projections. The usual plan is to cut the stay bolts short, some makers countersinking them on the dismountable rim and supplying special tools for their withdrawal, others cutting them as short as possible, so that they would fit in the limited space between the two rim surfaces. In the same way with the valve, there have been attempts at countersinking this, with a special valve connection for inflation, which could of course only be used when the rim was dismounted; others have retained the ordinary valve, making either a hole or a notch in the felloe for its accommodation.



SECTION OF MICHELIN FASTENER.

One of the earliest of dismountable rims to be put to practical service in speed tests was the Michelin, now manufactured at that firm's American factory. Here the tire is carried fully inflated on a dismounted rim, ready to be fixed over the wheel when required. The rim placed in position on the wheel, it is secured from rotary movement by a couple of stops and held secure by eight plates fitting over a corresponding number of bolts passing through the felloe. A strong claim for this rim is that the fasteners not only slip between the two rim surfaces, but are curved to embrace the round section of the dismountable rim, each fastener being held



NEW DIAMOND DISMOUNTABLE.

by a nut on a heavy bolt passing through and secured in the felloe. A special magazine brace is furnished with the Michelin dismountable rim, by the use of which it is never necessary to handle the nuts with the fingers, each one passing into the magazine and presenting itself for use as soon as the brace is placed over the bolt.

Quite recently the Diamond Company has produced a demountable rim, in which the stay bolts and valve stem come flush with the surface of the rim. Provision, however, is made for inserting a special connection through the felloe to the valve if it is necessary to inflate the tire when mounted on the wheel. On the dismountable rim are six projecting lugs with eyeholes which fit over bolts projecting from the face of the felloe when the rim is mounted on the wheel. A nut on each secures the two from movement. There is no danger of binding, for, as will be seen from the illustration, only a portion of the two surfaces comes into contact.

In addition to their quick-detachable, the Fisk Rubber Company has also a removable rim. The wheel is fitted with a special steel rim, one edge of which is flanged to provide an abutment for the tire rim, the other edge being beveled to provide a recess for a specially constructed expanding ring. Both felloe and expanding ring are pierced at intervals by bolts fastened so that they cannot fall or turn. When the removable rim with its tire is placed in position, the nuts on the bolts are tightened, the ring expands into the beveled groove of the wheel rim, holding the removable rim tightly in place. To remove the rim, all that is necessary is to loosen the nuts, which causes the expanding ring to contract and the removable rim is readily slipped off.

On the Crescent dismountable rim the bearing points are two beveled edges of the fixed and removable rims, made of rolled carbon steel, galvanized. Six hinged clips are permanently secured to the felloe, each one being provided with a bolt and nut. Changing is materially facilitated by the hinging of the clips, the rim being dismounted by the removal of the six nuts.

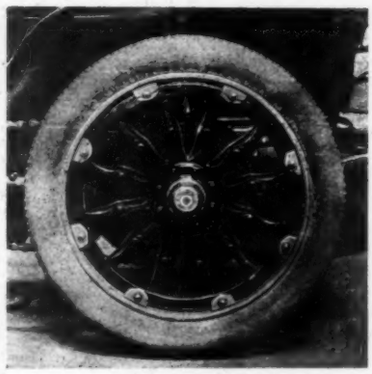
On the inner face of the Firestone dismountable rim are six projecting square steel stops corresponding with the same number of openings on the face of the fixed rim. The operation of mounting consists in slipping the movable rim over the fixed one with the stops in position to correspond with the grooves, imparting a slight rotary movement, and screwing up the six face plates on the felloe, so as to hold both rims. By this arrangement the rim is given six points of attachment against lateral and rotary movement.

DISMOUNTING THE FISK RIM.

Although newly introduced into this country, the demountable rim manufactured by the Continental Caoutchouc Company is one of the oldest in existence, having been successfully used in European races nearly three years ago. The inner edge of the fixed rim is beveled to form an abutment for the dismountable one, the outside support being eight wedges fitting over as many bolts passing through the felloe, each one being secured by a nut. Special stay bolts are employed, but the valve is of the ordinary type, an opening having been made for it in the felloe.

Conversion of ordinary road wheels to the dismountable type can be effected with nearly all the types described here, the operation being a comparatively simple one and not costly. If the felloe is of sufficient thickness to allow of it being planed down, it may be retained, though as a rule it has to be taken off and the spokes shortened. A new felloe is then fitted and bound with a special metal rim designed to accommodate the dismountable rim. Six to eight bolts have to be put through the wood felloe to correspond with the lugs or other fastening on the dismountable part. Where an ordinary valve is used this also has to be provided for by an opening on the face of the felloe. As regards security the converted wheel is just as satisfactory as those specially built for the improved type. To obtain the full benefit of dismountable rims, some attention should be paid to their cleanliness, dirt being removed from the screw heads when the car is washed, and the thread greased when a rim is dismounted. When mounting, too, it is necessary to observe that the nuts are tightened up gradually in opposite pairs in order that the pressure may be equally distributed.

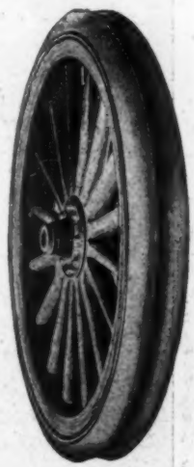
CRESCENT DISMOUNTABLE.



CONTINENTAL DEMOUNTABLE RIM.

THE LARGEST SOLID TIRE AT THE SHOW.

An interesting feature of the commercial vehicle section of the exhibit of the Firestone Tire & Rubber Company, of Akron, O., at the Chicago show, will be one of the largest solid tires ever exhibited. It is one of the Firestone Dual motor tires, measuring 53 1-2 inches in diameter, and will be shown with the business wagons for which it is intended, together with the other Firestone commercial tires, such as the endless and butt-end forms of both the side-wire and dual tires. In connection with the pleasure cars, the same company will show its line of quick-detachable, clincher and mechanically fastened tires and the 1908 Firestone dual tread and dismountable rim. Copies of the "Chauffeur's Moral Code," intended for the guidance of the drivers of commercial vehicles, will be distributed.



FIRESTONE DUAL TIRE.

INTERIOR OF OLYMPIA, LONDON, WHERE GREAT BRITAIN'S GREAT AUTOMOBILE TRADE IS EXHIBITING THE PRODUCTS OF ITS CONSTRUCTIVE GENIUS.

NEWS FROM BRITAIN'S AUTO SHOW AT OLYMPIA

LONDON, Nov. 13.—Olympia show should certainly be a big success this year from the salesman's point of view, for the multiplicity of provincial exhibitions which in former seasons have both drained the resources of the manufacturer and protracted the purchaser's efforts, have now been cut off by the Society of Motor Manufacturers and Traders, and but one other British show will follow Olympia, namely, at Manchester, in February next. The official opening of this, the largest yet of British motor exhibitions, was performed on Monday by the Duke of Connaught, who came down in his own car. This royal recognition of the movement is likely to be further emphasized, for, at the time of writing, the Kaiser is confidently expected to visit the show incognito, and it is not likely that Spain's motoring monarch will omit a visit before his departure from these shores.

A walk around the show at once confirms the opinion so prevalent of late. The reports of the over production of all the Continental firms was strongly contradicted by their agents. The new prices for 1908 season, however, tell their own tale. There is hardly a car of French or Italian make but shows a considerable reduction from previous prices—in some cases as much as £100 being marked off models which are unchanged in form from those of the past season.

Tendencies Evidenced in the New Models.

There are quite a number of interesting tendencies other than the main feature of price reduction mentioned above. The six-cylinder engine has gained many adherents even in the lowest powers—in several cases the rating being but 15 horsepower. The two and three-cylinder engine has been replaced by the four-cylinder type, leaving the single-cylinder engine to the smallest voiturette. The practice of casting the four cylinders in one block has grown greatly in favor, and on quite a dozen stands this short form of engine is shown. Casting in pairs is usual in other cases, comparatively few engines having separate cylinders. A distinct advance—from the user's point of view—has been made by the general placing of the crankshaft bearings in the upper half of the crankcase, enabling the lower half to be readily removed for inspection of the connecting rod ends.

Magneto ignition steadily advances in favor, particularly the high-tension variety, and even where not fitted standard, it is readily obtainable at slight extra cost. Several firms have caused surprise by abandoning the low-tension magneto for the high-tension variety, Thornycroft, in particular, having given up their well-tried system.

The general adoption of mechanical forms of engine lubrication was a prominent feature of last year's show and now comparatively few cars are found with the exhaust pressure drip feed device. On the lower priced car the drip feed is maintained, but the oil is supplied by means of a pump, belt-driven from the engine. The larger cars have almost invariably a gear-driven pump inside the crank chamber, drawing the oil from a well and forcing it through the main bearings. The nuisance of over lubrication is fast being obviated; as opposed to the general method of using an overflow, the Belsize car has a large, foot-operated pump, by which a pint or so of oil can be drawn from the crankcase whenever the engine shows a tendency to smoke.

Probably owing to the present general use of so many spirits of widely varying density, many firms have gone back to the hand-operated air lever, rightly considering it impossible for any carbureter to account for the combined effects of the many factors which enter into the question of a perfect mixture. Where the automatic carbureter is retained, the multiple type, in which the jets come successively into use as the engine speed rises, is growing in popularity. Frequently there is provision for admitting pure air into the cylinders when the engine is used as a brake in descending hills, thereby effecting a distinct fuel economy.

As regards frames, the tubular variety has been abandoned by everyone except the DeDions, and the only rival of the pressed steel frame occurs in the few instances where armored wood is adhered to. Many British makers prefer tubular cross members for their frames. In springs, on the other hand, there is more divergence of opinion. The three-quarter elliptic type of rear spring is found frequently on moderate powered cars, while even on the lowest priced four-seated cars the transverse rear spring is fitted. The use of shock absorbers has not spread, and in comparatively few cars are these fitted as standard.

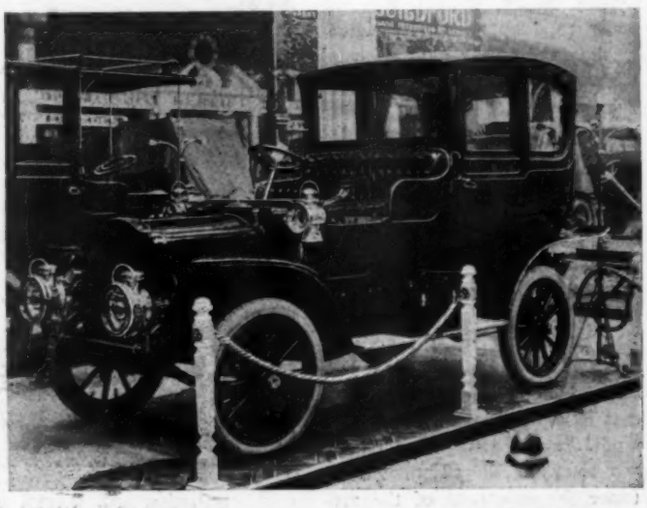
Multiple Disk Clutches Growing in Favor.

Turning to the transmission gear, the multiple disk clutch has grown considerably in favor, while the various types of expanding and contracting metal to metal clutches are rapidly dying out. Many British makers have adopted the well-known Hele-Shaw disk clutch, in which the disks are corrugated in section and alternately hard phosphor bronze and mild steel, the pack running in thin oil. The Italians, on the other hand, prefer the old Weston type of flat plate clutch, the disks being either all steel or else brass and steel. The use of a clutch brake for retarding the gearshaft when changing up has grown in favor, particularly when the large, leather-faced clutches are used.

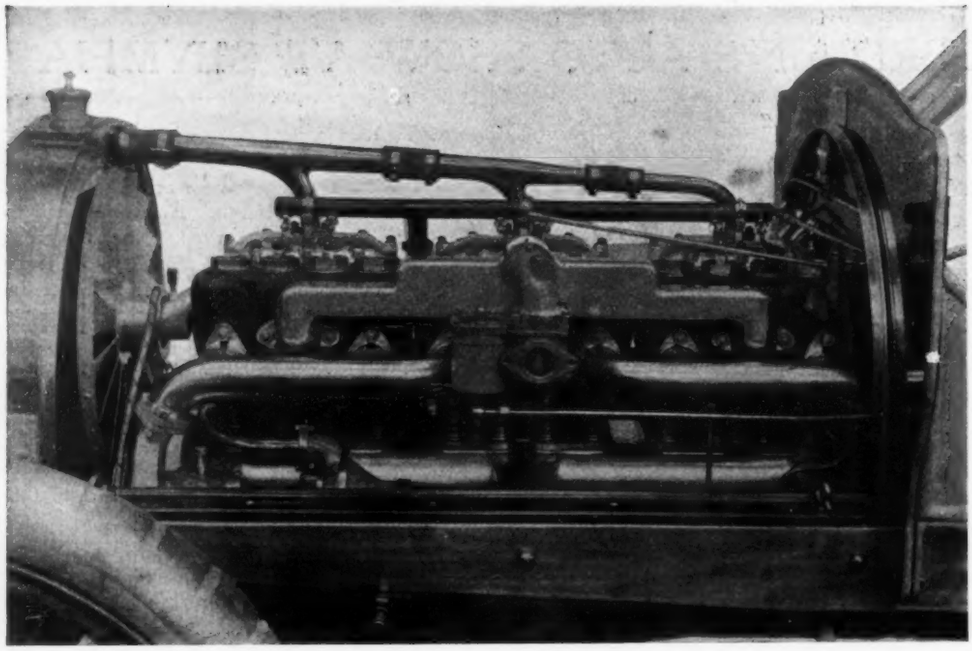
Ball bearings are almost universal for gear boxes; in fact, everywhere except in the engine, the ball bearing has come into general use. Several makers this year have adopted ball bearings for the crankshaft; on the other hand, the Hotchkiss cars, which were the first to adopt these bearings for the engine, will use plain bearings in future.

The provision of four indirect speeds is not now in favor; usually the third speed is made "direct," leaving the fourth speed rather high for use under specially favorable conditions. Some cars have arrangements of double bevel wheels in the differential, whereby direct drive on both third and fourth speeds is obtained. The gate change speed is now everywhere fitted and there is practically no British car of note which, like the Delaunay and the C. G. V., retains the old "straight through" quadrant. More attention is being paid to the protection of the striking gear from dust and mud and various are the interlocking devices which prevent the use of the reverse, while a forward speed is in gear.

A great decrease in the number of chain-driven cars is readily apparent, and so strong an upholder of the chain as Daimler now shows several "live axle" models. Where the chain is used, and this is only in high-powered cars, chain cases are frequently seen, the majority of these being substantial and oil-tight articles which



WHITE STEAM CAR FITTED WITH LOUIS XIV COACH BODY.



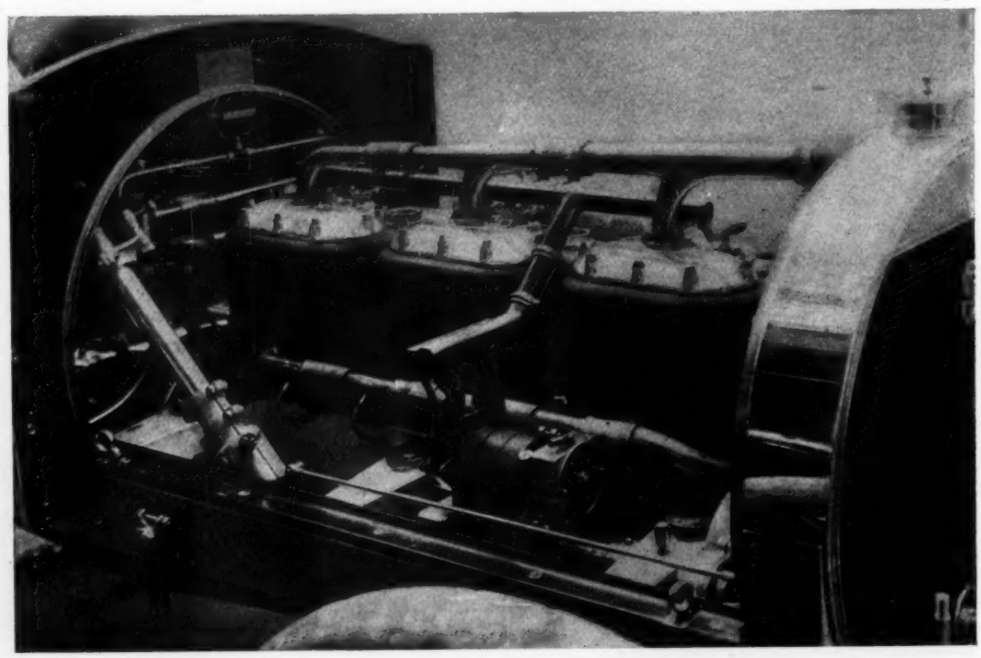
INTAKE AND EXHAUST SIDE OF THE SIX-CYLINDER SHEFFIELD SIMPLEX MOTOR.

will permit of the chain running in lubricant, so that the chief objection to the double chain drive of the average user, which is founded upon the dirt-gathering propensities of the chains, has been overcome. A rather interesting tendency in some live axle cars is the provision of a substantial casing round the propeller shaft which serves as a radius rod and greatly simplifies the rear part of the chassis.

Brakes have not received very much attention, but there is in some cases the provision of both sets of brakes on the rear wheels themselves, removing the usual strain from the transmission gear. With a similar end in view, a few cars have the foot-operated brake acting on the rear wheel drums, while the countershaft brake is worked by the side lever and intended for use in emergencies only.

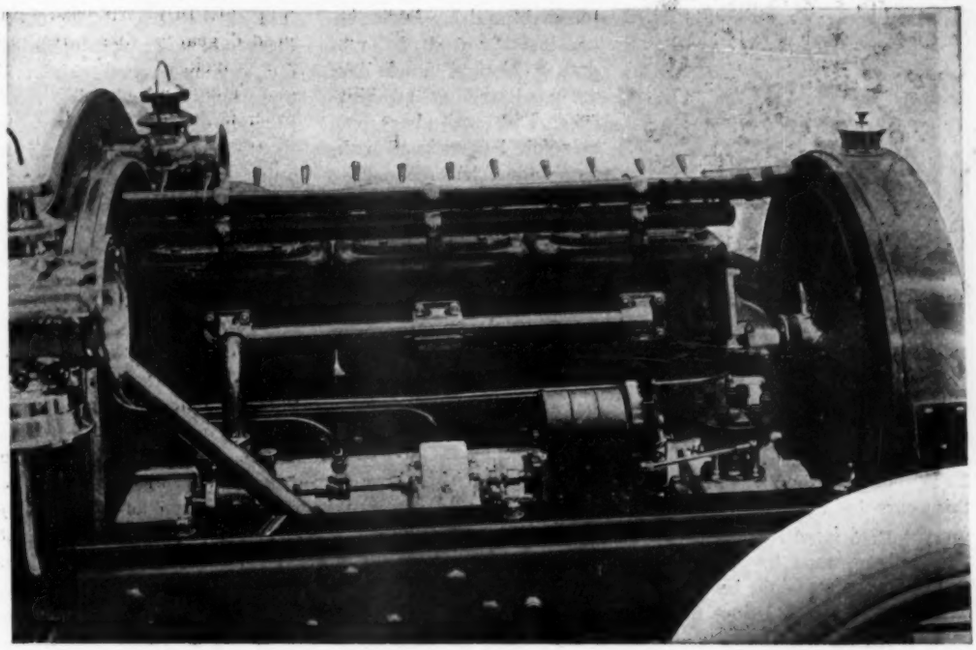
The final point of note—that of wheels—shows a distinct tendency towards the adoption of the wire wheel, Napiers in particular offering them on all models. These wheels certainly seem to possess distinct advantages over the wooden artillery type, and if public opinion can only be got to agree to the change, many makers will be ready to adopt the wire wheel by the time of the next show.

More interesting, perhaps, than a résumé of the general body of exhibits, is a brief description of some of the most representative cars. Daimler and Napier are the names which first suggest themselves, and it would be hard to find two such equally popular cars which differ so much in main details. The Daimler firm still adheres to the slow-running four-cylinder engine with the cylinders cast in pairs, the 42-horsepower model having a stroke of 130 by 150 mm., and the 58-horsepower (note the exactness of the rating) no less dimensions than 155 by 140 mm. The normal engine speed of both these engines is 650 revolutions per minute. The camshafts and valve gear are now inclosed, thereby removing the principal objection which always existed in Daimlers from the mechanical point of view. In place of the single trembler coil and high-tension distributor formerly used, four single non-trembler coils are now placed directly over the engine, but a few inches of wiring being necessary. An auto-trembler device is inserted in the battery circuit and this is in continuous operation. In the 42-horsepower model, the drive is taken through a leather-faced cone clutch to a long speed gear box in which the third speed is direct. Worm drive takes the power to the chain countershaft, a double arrangement of worms and worm-wheels necessitating but a single gear reduction on the indirect speeds. The 58-horsepower model has four indirect speeds and bevel drive to the countershaft. Both these cars are provided with efficient chain cases, with which are combined radius rods and eccentric bosses for adjustment of the chains. Right up to the opening of the show, the public confidently looked for the production of a low priced and moderate powered Daimler car. This has not made its appearance, but two new live axle models are provided. These cars have respectively bore and stroke of 110 by 130 and 125 by 130 mm., being rated at 30 and 38 horsepower. The gear boxes have four speeds with direct drive on third. The propeller shaft is provided with universal joints at both ends. The rear axle casing is built together in two halves and the horizontal joint is then welded together by oxy-acetylene process. The differential can be removed through an opening forward and



MAGNETO AND WATER INTAKE SIDE OF 45-HORSEPOWER SHEFFIELD SIMPLEX MOTOR.

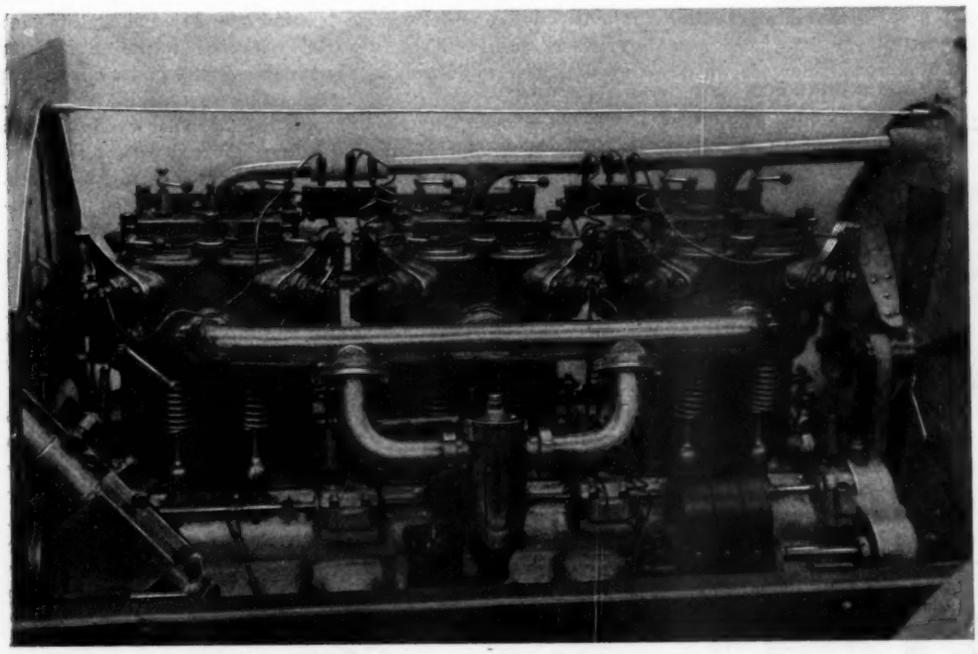
the driving shafts are withdrawn through the road wheel hubs. What might possibly be considered a defective point of design is the absence of radius and torque rods, both these duties having to be performed by the rear springs. The only other matter for possible criticism is the single control lever on the steering wheel, which actuates both spark and throttle. The general tendency makes for the separation of these two controls, and it would certainly seem impossible to get absolutely best results from an engine in which the ignition is advanced only with full throttle. The price of these cars is £620 for the 40-horsepower, £695 for the 38-horsepower, and for the remaining chain-drive models of 42 and 58-horsepower, respectively, £700 and £925, all prices being for cars complete with standard bodies.



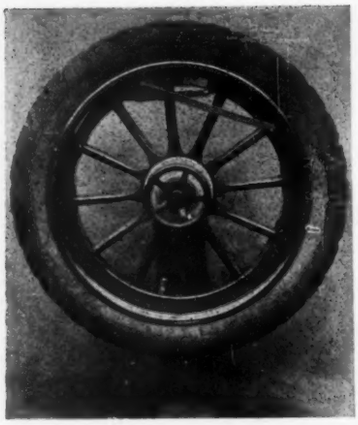
M. & M. C. SIX-CYLINDER, 35-40 HORSEPOWER MOTOR, MAGNETO SIDE.

In contrast to the Daimler, the Napier has, of course, the high-speed six-cylinder engine with live axle drive. While retaining the 40 and 60-horsepower models, which have gained such a reputation for themselves during the past two seasons, the Napier stand includes the new 30-horsepower six-cylinder model, which at the chassis price of £575, brings the high-grade six-cylinder car within the reach of an entirely new section of the motoring public. This car is built exactly on the lines of its bigger fellows and, except by the absence of a few refinements, it has lost nothing in the cheapening. The engine has cylinders 102 by 102 mm., with valves all on one side. A new semi-automatic carbureter provides the mixture, its action being automatic as regards the variation in engine speed, but having a hand-operated air lever to enable the use of various grades of petrol. An excellent system of forced lubrication feeds all bearings, while the splash oils the cylinder walls. Great attention has been paid to the lubrication of the other parts of the car and every single spring, shackle, and joint has its screw down greaser. The power from the engine is transmitted through a multiple disk clutch with flat steel disks and a flexible joint couples up to the three-speed gearbox. The gearbox shafts are short and have, in addition, a third inside bearing, so that no whip of the shafts can take place. When the top or direct drive is engaged, the secondary shaft is quite idle and does not revolve. Ball bearings of large size are fitted throughout the gearbox and transmission gear. Special attention has been paid to the springing and brakes and, taking every point into consideration, this Napier 30-horsepower may be called the most interesting British-built chassis to be seen at the show.

The Crossley car is the production of the famous gas engine concern of that name, and has the additional advantage of embodying much of the practical experience of Charles Jarrott, who holds the selling rights. The characteristic features of the single model—40-horsepower—is the accessibility of every part and the ease with which any portion of the transmission gear may be removed without disturbance of the adjacent members. The four-cylinder engine is cast in pairs and has bore and stroke of 120 by 150 mm. The carbureter is an improved form of the Xenia, with extra air inlets operated by a piston floating on mercury, the level of which is raised or depressed according to the varying pressure in the induction pipe. The clutch is one of the few remaining examples of the internal expanding metal type and the gearbox is remarkable in that its casing is cast in one piece,



SIX-CYLINDER, 60-HORSEPOWER BRITISH MERCEDES MOTOR, INTAKE SIDE.

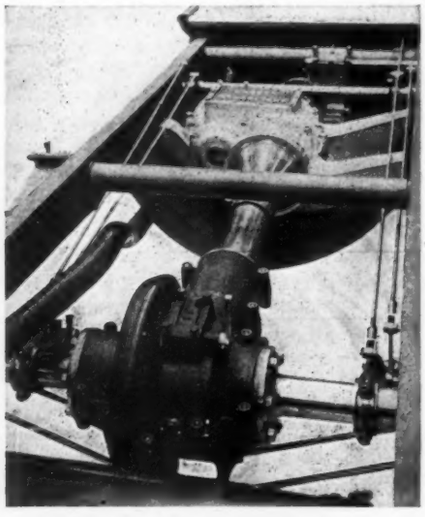


DUNLOP DETACHABLE RIM.

the main and lay shafts being inserted from the rear end. Oil-tight joints are arranged at the end bearings, and the gears can therefore be run in oil without undue leakage taking place. The same gear pump which effects the force lubrication system of the engine keeps the gearbox supplied with oil. In the back axle, the differential can readily be withdrawn without removing the body or the axle itself. But it is not so much in distinctive points as in general excellence of workmanship and attention to details that this car is noteworthy, and at its price of £800 ready for the road it will without doubt find a good following during the coming season.

Similar praise might be accorded to the Austin cars, the comparatively new productions of the designer of the early Wolseley cars—those marvels of reliability. The 18-20 and 40-horsepower four-cylinder cars and the 60-horsepower six-cylinder model all follow standard lines, with special reference to accessibility of valves, pump and carbureter. On the 60-horsepower, an interesting feature is the provision of two magnetos. The ordinary magneto (Simms-Bosch high-tension) will run the engine well at very low and at normal speeds, but for high speeds above 1,500 revolutions per minute (and this well-balanced engine can attain over 2,500 r. p. m.) the second specially wound magneto is switched into use and runs the engine till speed falls to normal again. By this method, it is found possible to run the car on top gear through a most remarkable range of speed. A special system of lubrication through the hollow crankshaft to the main and connecting rod bearings is worked by two gear-driven pumps, which draw the oil from either end of the crankcase, so that the lubrication is efficiently performed when the car is on the steepest grades as well as when the oil supply is low.

To meet the "all-British" demand, the new Fiat works at Wembley were expected to have produced home-built Fiat cars by this time, but these have not put in an appearance, nor has the British edition of the Metallurgique, the well-known Belgian car. There is on view, however, a 45-horsepower Mercedes made in London under license and exactly following the lines of the Cannsttat production. As a matter of fact, the Daimler-Mercedes car has been built at Sheffield for some time, but this is on somewhat distinct lines from the Mercedes proper. One other new departure is the Birmingham built Lorraine-Dietrich. This 20-30-horsepower car has four-cylinder engine with 90 by 120 mm. cylinders cast in pairs. The ignition is low-tension magneto and can be advanced by sliding the roller ended tappets along the face of the cam. Some 60 flat plates are found in the clutch; these have no separating springs but are each slightly bent. When the pressure is upon the plates, they are flattened out and transmit the power, but as soon as the clutch pedal is depressed, the plates jump into their bent shape and so free themselves. The four-speeded gearbox has direct drive on third, and all the striking gear is inclosed, so that no part of it can be deprived of lubrication. The propeller shaft is surrounded by a pressed steel casing which acts as torque and radius rod and also retains the lubricant for the universal joints of the shaft itself. Two independent radius rods are also provided, these being pressed steel of girder section. The rear wheels are canted outwards somewhat at the top, and for this purpose the driving shafts are provided with universal joints at their inner ends. Complete, this car sells at £550, and should serve to maintain the reputation held by the French chain-drive Dietrich models.



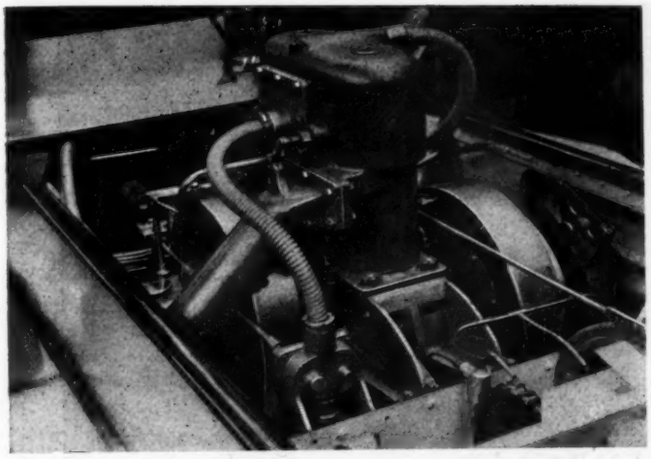
M. & M. C. DIFFERENTIAL HOUSING.

The Siddeley cars now include in their number a low powered model of high grade which well meets the demands of that section of the public, whose car, though low in price, must be a four-cylinder model of good construction and fair speed. The new 14-horsepower Siddeley (which the makers alternately list at the R. A. C. rating of 20-horsepower) has cylinders in pairs, the bore and stroke being 90 by 102 mm. The valves are operated by a camshaft and cooling is by thermo-syphon circulation, without pump. The power is transmitted through a leather clutch to a three-speed gearbox with gate control, whence a double universal jointed propeller shaft takes the drive to the rear live axle. This is formed of tapered, flanged, drawn steel tubes, the weight of the car being carried on the sleeves. The chassis scales at but 1,650 pounds total, and its price of £320 attracts much attention. The other Siddeley productions range up to the six-cylinder 45-horsepower car at £850, which model is owned by the Queen for her special use.

What Is Shown in the Lower-priced Types.

Round the £300 price are numerous other well-made cars, all strongly similar in construction and of such equal value that the intending purchaser is hard pressed to make his selection. Calthorpe, Bell, Alldays, and a dozen others all fulfill this need, for it is perhaps in this particular department that the British maker has specialized with best results. Mention might be made of the Star 12-horsepower car which gives a well-constructed four-cylinder engine, with magneto ignition and a special multiple jet carbureter and, unusual in so low powered a car, an indirect fourth speed, while the price, with five seated body, comes out at but £300.

The Humber is without doubt the most popular car in Britain and therefore deserves some attention. The firm runs two distinct works: at Beeston, the higher powered cars are produced, the new season's models being the 30-horsepower and the 20-horsepower. The 30-horsepower model is nearer 45-horsepower than its rated power, the bore and stroke of the four-cylinder engine being 120 by 150 mm. Two magnetos, high and low tension, are employed, disposed on opposite sides of the engine. The H. T. magneto is carried on a rocking cradle by metal straps and is capable of being rocked about the armature shaft, thereby advancing or retarding the ignition. The lubrication is effected by gear pump through the drilled-out crankshaft. The drive is transmitted through a Hele-Shaw clutch, with an ingenious form of gearshaft brake which does not come into action when changing down. Ball bearings are fitted in every possible part of the transmission gear. Special attention has been paid to the brakes, which are all easily adjusted by hand, and it would be impossible to find a more powerful speed arrester than the countershaft brake, while for the back wheel brakes an ingenious differential movement introduced into the rod system insures perfect equalization of action. The price for this car, with body complete, is £575. It is interesting to note that this model is evolved from the car that won the last Heavy Tourist Trophy race, while from



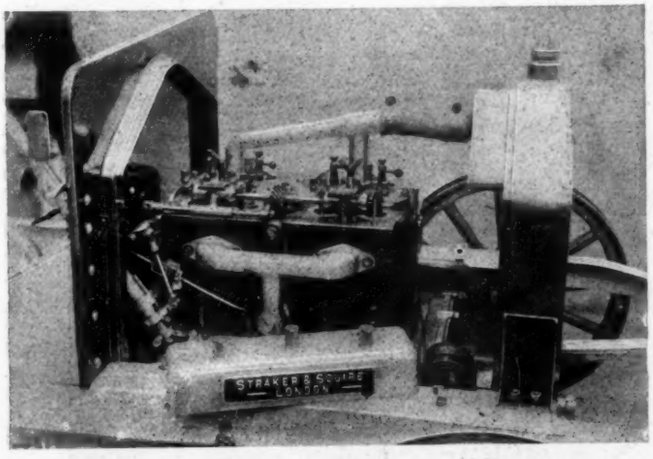
VALVELESS 20-HORSEPOWER, TWO-CYLINDER MOTOR.

the Beeston car that ran second in the Tourist trophy itself the present 20-horsepower car has been designed. The engine has four separate cylinders with twin magneto ignitions, high and low-tension. With cone clutch, four speeds, and ball bearings everywhere except in the engine, this car sells, complete, at £424.

It is the Coventry Humber car, however, that has secured the greatest success, and the 10-12-horsepower model might well be claimed the most popular European car yet built. To replace last year's 10-12-horsepower the new 15-horsepower model has been brought out, listed at £315, complete with body and full kit of tools. The four separate-cylindered engine has 95 by 115 mm. bore and stroke and develops about 24 horsepower maximum. The engine relies on splash lubrication, but on a separate model, slightly higher in price, an efficient forced lubrication system is fitted. The gearbox has three forward speeds with direct drive on top. Both shafts run on ball bearings and control it by gate change, the knot on top of the gear lever rocking inwards to operate the reverse catch. In the rear axle the wheels run on sleeves on the axle casing, the drive being transmitted through outside dog clutches.

This car is undoubtedly excellent value, but the big Coventry Humber feature and the car which is expected to keep busy the new Humber works at Coventry—the biggest in the world— is the small 10-12-horsepower model. This engine has four separate cylinders, 84 by 96 mm., with splash lubrication and accumulator and coil ignition, the commutator being driven vertically and brought to a convenient position on a level with the tops of the cylinders. The frame is of channel steel, with tubular cross members. The clutch is leather-faced and self-contained, the pressure being given by three coiled springs which pull on a ball thrust ring on the crankshaft. The gearbox gives three forward speeds and reverse operated by a gate lever and, as in the back axle, ball bearings are employed throughout. The brakes are well looked after, and the control levers are brought up to sectors on the wheel. With side-entrance body, supported upon an additional transverse spring at the rear, and with full kit of tools, the price is £250—as low a figure as is likely to be reached for some time to come.

There are, of course, two-seated cars with single-cylinder engines, in price down to £130, but, with the exception of the little Rover and the Riley, the British makers have left the production of small voiturettes to the French and have preferred to interest themselves with the light type of four-cylinder cars with four-seated body.



STRAKER & SQUIRE FOUR-CYLINDER 16-20 H.P. MOTOR.

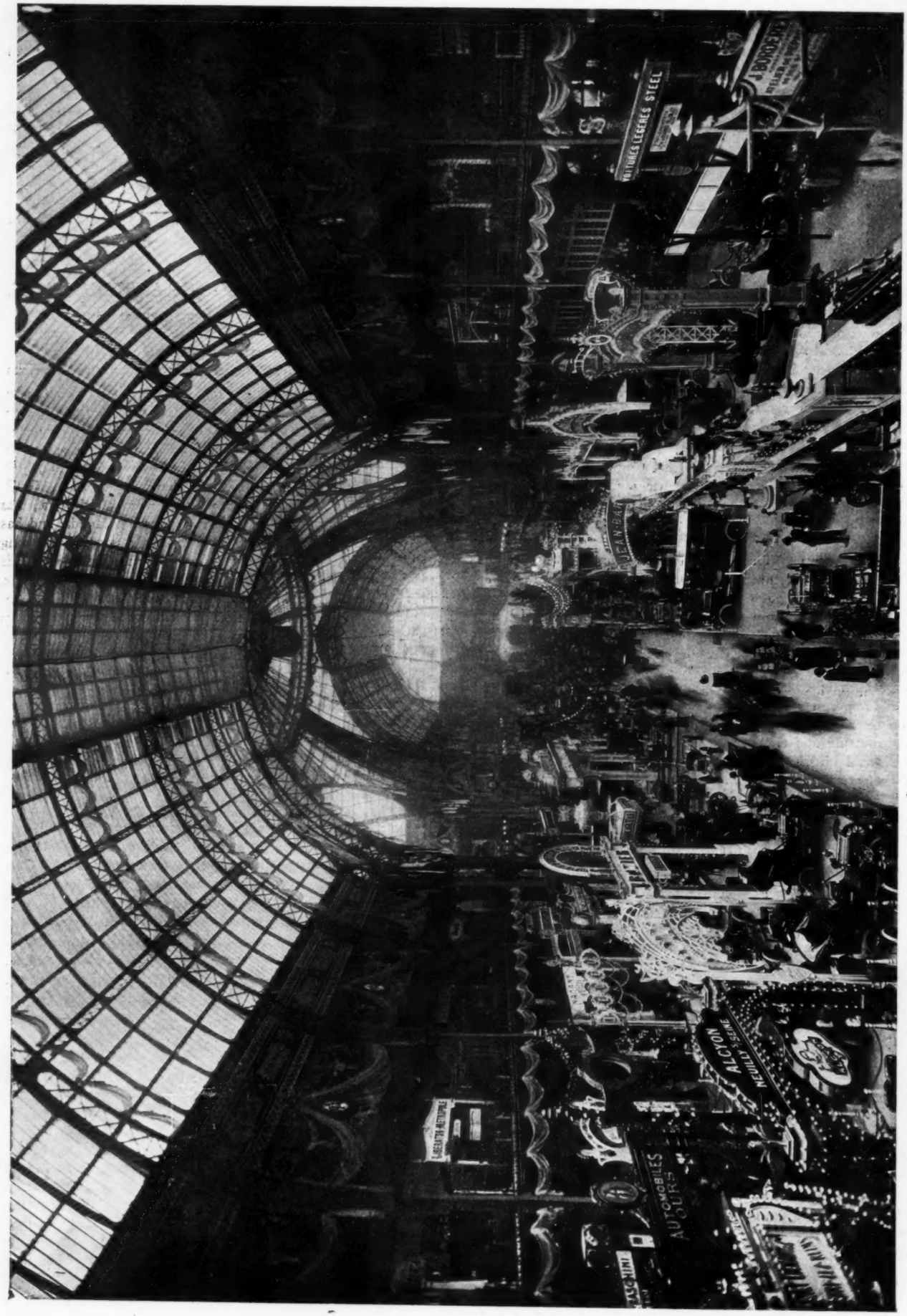
ENGLISH VANADIUM STEEL FOR AMERICAN CARS.

Vanadium steel having come to be regarded as the highest standard for automobile construction is now largely employed in many of the best-known American cars, and the demand for it has led one of the oldest English mills to enter the American market. This is the Ferry Works of Willans & Robinson, Ltd., situated at Queen's Ferry, S. O. Flintshire, England. G. F. Ehrenzeller, the Pennsylvania Building, Philadelphia, Pa., has taken the sole agency for the United States and Canada, and has been recently sending the trade illustrated catalogues showing the wide range of shapes in which this material is offered by his firm. Some of the principal of these are crankshafts and axles, springs, forgings and stampings, gear-wheel blanks and the like. In the catalogue in question illustrations of the micro-structure of some types of the steel are given, as well as the particulars of a great number of tests, which should be of interest to the designer. The qualities of the vanadium steel produced are set forth in detail, in addition to which a large number of different parts are shown. This firm also manufactures high-quality carbon steels suitable for various purposes, including special steels for tube-drawing and for forging, the former being the result of long-continued experiments, and is said to be particularly adapted to the making of the highest grade of solid-drawn tubes. Forging steels of special quality, as well as high-grade nickel steels, constitute another line specialized by this firm. Copies of the pamphlet describing the entire range of steels produced by this mill may be had of the American agent.

SOME BOOKS FOR AUTOMOBILISTS.

Gas Engines and Producers; Marks-Wyer. Under this title the American School of Correspondence, Chicago, has just issued a treatise on the modern development of the internal combustion motor and efficient methods of fuel economy and power production, the subject of Gas and Oil Engines being handled by Lionel S. Marks, S.B., M.M.E., and that of Gas-Producers by Samuel S. Wyer, M.E. The volume, of about 150 pages, really contains two independent treatises, about half being devoted to each, both subjects being copiously illustrated and detailing the latest achievements of modern practice where engines and producers are concerned.

Balancing of Engines, Steam, Gas and Petrol, is the title of a work by Archibald Sharp, just issued by Longmans & Company. With the exception of a few analytical investigations, the treatment of the subject is graphical and the work is intended both as a textbook for the student and a reference volume for the engineer. It forms a welcome addition to the works on the subject owing to the greatly increased amount of attention devoted to the subject of engine balancing as the result of the rapid development of the automobile motor. The only standard work on engine-balancing hitherto available is that by Professor Dalby (England), so that much of the subject matter of the new volume is published for the first time.



TENTH ANNUAL EXPOSITION AT THE GRAND PALAIS, WHICH HOUSED THE GREATEST NUMBER OF CARS EVER SEEN IN A EUROPEAN AUTOMOBILE SHOW.

THE PARIS SALON IS GRANDER AND LARGER

PARIS, Nov. 21.—A few minutes before 10 o'clock on Tuesday morning, November 12, a Panhard limousine rolled out of the Faubourg Saint-Honoré entrance of the Elysée Palace, crossed the Champs-Elysées and pulled up in front of the main entrance of the Grand Palais as the neighboring clocks chimed ten. President Fallières and his military attachés stepped out, were met by the Minister of War, the Minister of Commerce, the heads of the Parliament, police and military forces of the capital, and mounted the broad staircase lined by tall, white-breeched Republican Guards, while the strains of the "Marseillaise" rung out and all hats were doffed. At the head of the stairs Gustave Rives, Marquis de Dion, Baron de Zuylen and a host of constructors whose names are known the world over, stood hat in hand to receive the distinguished group. The usual words of greeting, and the tenth annual Paris Salon was inaugurated much as its immediate predecessors had been. But the presidential duties only terminated an hour and a half later, after all the principal stands had been visited rapidly and some speech-making done at each.

In its main lines the tenth salon is like that of last year; the ground floor of the Grand Palais is reserved exclusively for pleasure vehicles, the lower gallery is given over to complete cars and examples of bodywork, and on the extensive upper galleries, with their adjoining halls equal in floor space to the area of Madison Square, are shown motorcycles, bicycles, and the thousand and one accessories connected with automobiles.

Temporary Buildings Erected for Commercial Vehicles.

Three hundred yards away, on the opposite side of the River Seine, a huge temporary building, equal in area to the Grand Palais, has been erected specially for commercial vehicles. Although interior decoration has not been neglected, there is more of the factory than the reception hall in this building, scores of power plants being in motion, for the production of electric light and a variety of industrial purposes, big gasoline and still larger gas engines furnishing the motive power; machine tool makers from Germany, America, France and England have machines at work cutting gears, grinding cylinders, and transforming more or less rough bars of steel into finished crank and camshafts. On the stands are omnibuses, trucks varying in size from the light rapid delivery vehicle to the formidable Renard train, gasoline cabs, a few steam tractors and still fewer electric trucks.

Motor boats have broken adrift from the main exhibition and are housed in the Palais Moderne, a short distance further out of town. Although the penalty of excommunication is declared to await any constructor who exhibits at a rival show, there are a sufficiency of firms interested only in the motor boat to form a fairly satisfactory independent nautical show.

What Ten Years Have Brought Forth.

The present salon being the tenth in an unbroken line of succession, an effort has been made to give it even greater éclat and make it more of a national event than any of its predecessors. In 1898 Gustave Rives organized a sixteen-day show in the Tuileries Garden, uniting 340 firms and receiving 140,000 paying visitors. Two years later a move was made to the Grand Palais, the present being the eighth annual exhibition held there, each one under the control of the Automobile Club of France, and with Gustave Rives as manager. From 33,000 square yards of exhibition space last year the amount has been increased to 47,840 square yards by the construction of the hall on the Esplanade des Invalides, making this automobile show not only the largest in the world, but also the largest trade exhibition of any kind ever organized. The total number of exhibitors is 1,400, of which 1,100 are French and 300 foreign. Italy, Germany, and Belgium are represented by all their most prominent firms; English makers of automobiles are present to the number of four, and America has Ford as sole representative. In the machine tool section America is completely represented, all the makers from across the Atlantic being represented by agents. The estimated value of the exhibits, according to the declarations made for insurance purposes, is $8,000,000, compared with $6,000,000 last year. In 1906 there were 450,000 paid entries during the seventeen days of the salon; this year, owing to the decennial, it has been decided to remain open twenty days, half a million paid entries being expected. Actual attendance will be considerably larger, for on all but society days free passes are distributed.

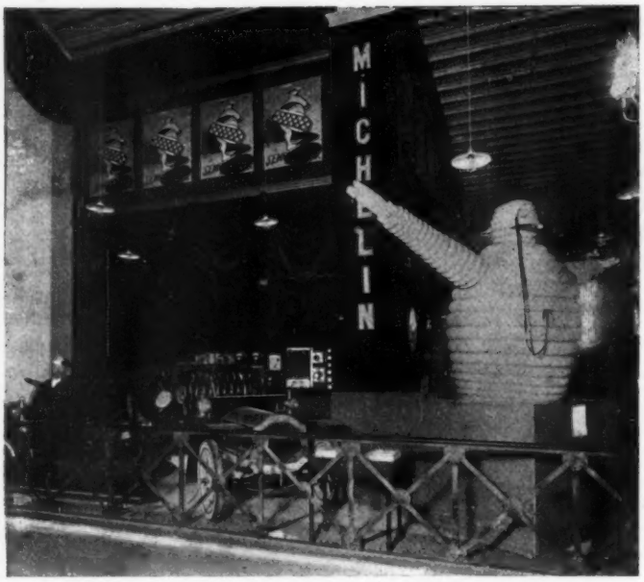
Illuminations Are on a Grand Scale.

External illuminations comprise not only the two exhibition halls, but all the surrounding avenues, from the Rond Point in the Avenue des Champs-Elysées to the extreme east of the Place de la Concorde, including the premises of the Automobile Club of France; from the Champs-Elysées to the temporary hall on the south side of the river is a magnificent luminous avenue, enhanced by the graceful decorations of the bridge itself. The Grand Palais being one of the most artistic buildings in the city, illuminations have been employed only to throw into relief its graceful outline and sculptures, all the lights being placed behind the columns or in the roof of the wide gallery, throwing a gentle white light on the inner portions and decorative friezes of the building, but developing the main lines more pronouncedly by reason of their sombreness. The temporary hall, on the other hand, is a mass of light, forming a termination to the luminous avenue passing in front of the Grand Palais and over the river.

The internal decorations are marvelously effective and artistic, the metal columns of the building and the metal work of the roof being picked out in bands of soft colors. Under the big central glass dome is the masterpiece of luminous decoration, a ball of light in the center, with colored bands radiating from it, and a background giving the effect of illuminated lace work. From each corner of the big hall electric searchlights shine upon the central portion, the ensemble being of such an effect as to altogether beggar description. The estimate of $600 an hour for lighting the building and stands does not appear at all exaggerated, when one has seen the effect produced by the quarter of a million lamps. Although the full illuminating power is only turned on from 4 to 6 o'clock each day, it is estimated that the total cost of illuminations for the entire exhibition will be $34,500. An unfortunate feature of the decorative scheme is that it has been the cause of loss of life, several workmen dropping from the dome with fatal results in one if not two cases.

Lavishness of the Decorations.

Individual stands are on the same lavishness as the decorations of the hall, and although the design is left entirely to the firms concerned, there is not a single case of inartistic construction or anything which mars the beauty of the whole. Illuminated wrought ironwork stands predominate, last year's designs being employed in more than half the cases, with certain embellishments. De Dion is one of the few having entirely departed from last year's design with a model of the gate of the famous Winter Palace at Pekin, in commemoration of the journey of their cars from Pekin to Paris this summer. For the first time since a show was held in the Grand Palais there were one or two vacant places on the stands. Forty-eight hours before the official opening order was given that no more vehicles should be allowed to enter the Palais. Previous to this trucks had been entering by the north door, passing down the main alley, dropping off their loads where needed and leaving by the south door. After they were refused admission, one of the doors had to be built up, several pits filled, some of the pathways cemented and carpets laid.



MICHELIN EXHIBIT, WITH "BIBENDUM," THE TIRE MAN.

Late arrivals, therefore, will have to be carried to their respective stands by gangs of workmen during the night.

Opposite the main entrance, in the most conspicuous part of the building, is the stand of honor, decorated in blue satin and containing the Fiat victorious in the Grand Prix, the Darracq which won the Sporting Commission Cup, a Peugeot winner of the Coupe de la Presse, and a De Dion which took part in the Pekin-Paris run. At the commercial section there is an interesting retrospective exhibition of automobiles which attracts considerably more attention than the retrospective bicycle exhibition of last year, also organized by M. Baillif of the Touring Club of France. From the first road locomotive invented in 1770 by Cugnot, the development of the automobile is shown by such models as Léon Bollée's "Mancelle," De Dion steam tricycles, a 2 1-2-horsepower Panhard Levassor of 1892, the Peugeot which won Paris-Bordeaux and return in 1895, Thery's Brasier which won the Gordon Bennett Cup for France in 1904, and a modern machine by way of comparison.

Tendency Is Towards Six Cylinders.

Contrary to what is generally reported on the fixity of design, there are fully as many changes on 1908 European models as were to be observed for 1907 or 1906. Speaking generally, the tendency is towards six cylinders for the largest cars—the automobile de luxe—and towards the greater development of small popular vehicles. It cannot be denied that the six-cylinder engine has gained ground enormously, for whereas in 1905 there were only three types at the Paris Salon and 23 in 1906, there are this year 77 distinct six-cylinder models on exhibition, this number comprising only those firms building a complete car. Those having joined the ranks this year include such well-known firms as Renault, Panhard, Berliet, Delaunay-Belleville, Brasier, Gobron Brillie, and Mors. Panhard and Brasier both had a six model last year, but so far as can be learned it was more of an experiment than a commercial proposition, produced to meet the request of a few enthusiasts. Generally there is little enthusiasm shown for sixes, even among those now marketing them. Builders recognize their superiority in the matter of flexibility and absence of vibration, but they cannot sufficiently forget the disadvantage of a six-cylinder engine to recommend them unanimously to the public. Although everybody who is anybody is now producing sixes, nobody is building them in large quantities, and there is not a single house in France building sixes exclusively, as is the case with some English and American firms. Prices generally are maintained. On the largest models there is a reduction in price, it is true, but the medium and lower-powered cars are marketed at the same price as last year, with a few exceptions where increase has been made.

Voiturettes are being given the attention they deserve, there being now on the market a score of excellent little single or two-cylinder cars selling at slightly less than $1,000. There is the same pronounced tendency, too, for the big firms to produce moderate-priced touring cars—four-cylinder engine of about 16 horsepower, with high-tension magneto, selective transmission and shaft drive, selling complete with touring body for $1,500. Luxuriousness in touring has reached a high stage, closed bodies having every comfort imaginable, and more cars than ever before being shown in which provision is made for protecting the driver from wind and rain, while remaining separate from the passengers.

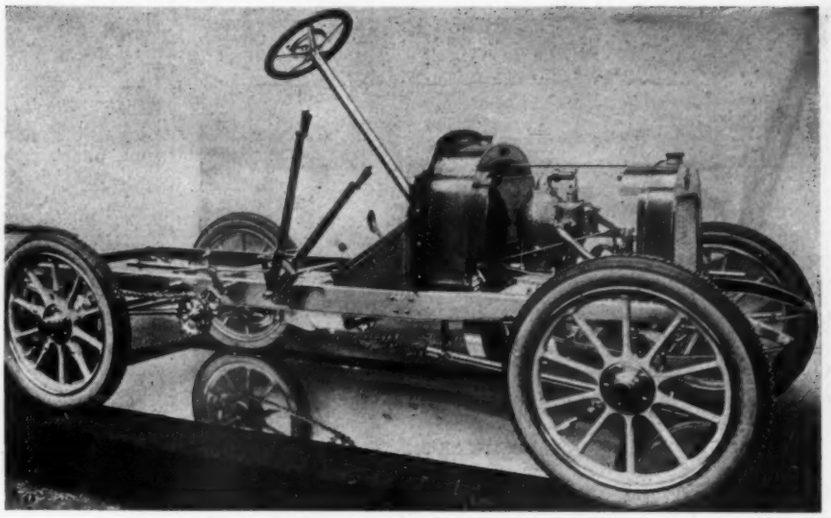
Four-cylinder Castings in One Piece.

Four cylinder castings in one piece have gained a prominent position, such progress having been made in foundry methods that fours in one block are now produced with as much certainty as single cylinders were cast a few years ago. In the chassis intended for cab service and the numerous examples of town vehicles this method is especially advantageous, for it gives a smaller and more compact engine, diminishes weight, simplifies cooling and reduces the water pipe connections. The tendency towards a single casting is in line with the greater simplicity and accessibility of the leading makes. High-tension magneto as a source of electric supply is particularly pronounced. Two complete systems are not considered as necessary as formerly, and in only very rare exceptions—less than 1 per cent. of the whole—are storage batteries relied upon as the primary source of electric current.

Attention has been given to the transmission, which in a very large majority of cases is of the selective type, a strong tendency also being towards two direct drives, as on the Berliet. Brakes have been given close attention, a number of interesting examples being shown of methods of braking by the engine. In

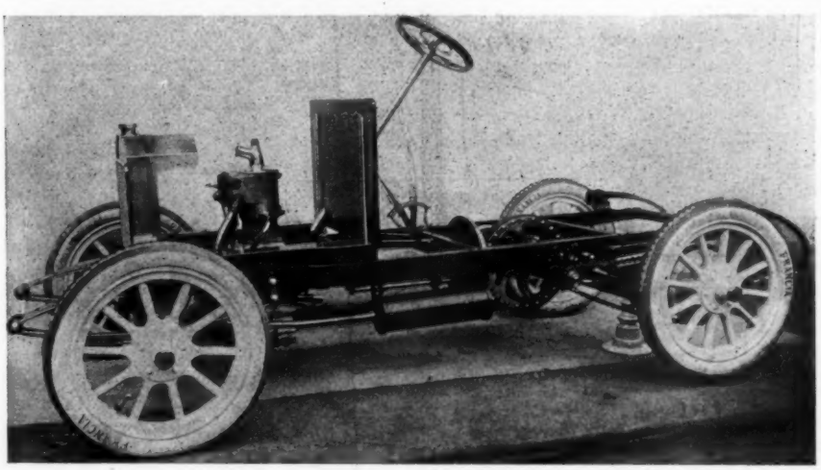
AT NIGHT THE GRAND PALAIS PRESENTS A GORGEOUS SPECTACLE.

the matter of suspension three-quarter elliptic springs have strongly increased in favor for the more powerful cars, entirely driving before them the platform type. The transverse rear spring remains on the smaller models, where it gives good results without the prejudicial twisting movement noticeable on the large cars and especially those with chain drive. Multiple disk clutches are more in favor than ever, while final drive by side chains has gone out of fashion in equal proportion. Two of the latest and most important converts to shaft drive are Panhard and Dietrich. The Panhard case is especially noticeable, for though the pioneer firm has built small cars for years none of them have been fitted with live axle. A few years ago a couple of shaft-driven racers were produced, but the practice was not followed in touring cars. Both Dietrich and Panhard limit the shaft to their smaller models, equipping all the larger cars with side chains, as before.



SINGLE-CYLINDER, SIDE-CHAIN DRIVEN PEUGEOT LIGHT CAR.

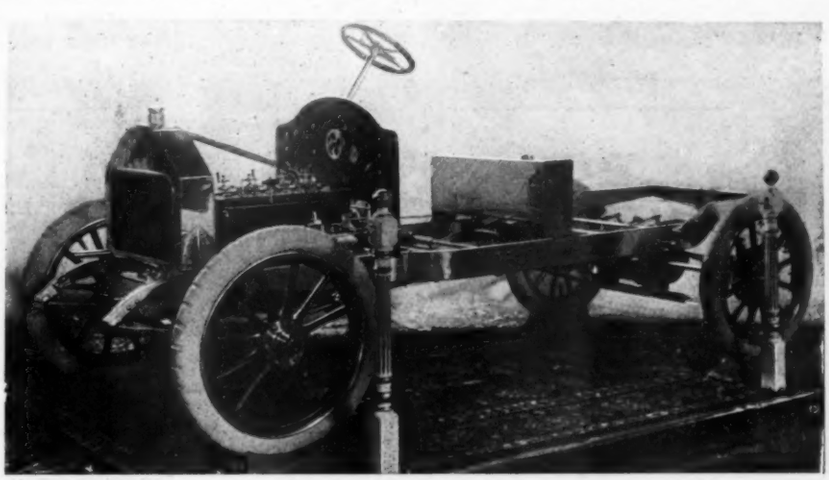
More important than the tendency towards shaft drive is that towards the inclusion of the gearbox with the differential on the rear axle. The practice is not new, but it is not until this year that it has been at all prominent. There is a good example in the new Darracq with a solid axle carrying the road wheels, deeply bowed to allow the oblong gearbox containing the change-speed gears, differential and driving bevels to be bolted on it. The driving shafts pass through the bored ends of the solid axle and drive the road wheels through the medium of a clutch. Other features of the new Darracq are four cylinders in a single casting, with the intake and exhaust piping embodied in the casting; piping is thus simplified to such an extent that all that is necessary is a short straight pipe from the carbureter and a single pipe from the manifold to the muffler.



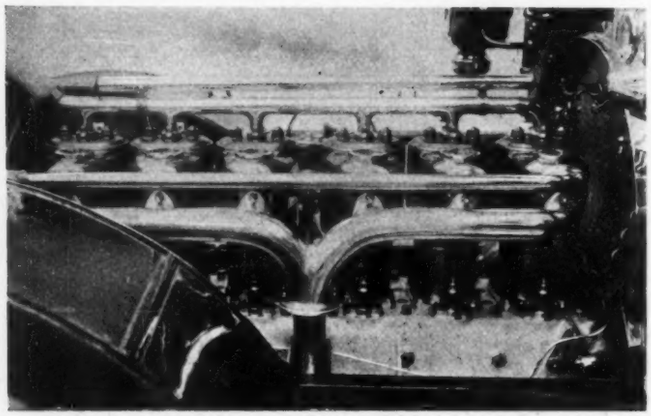
THE ONLY FRICTION-DRIVEN CAR MADE IN FRANCE.

Renault has produced a new six-cylinder model of 50 horsepower, but has made but few changes in the four-cylinder models. A self-starter now forms part of the regular equipment; a device of this nature was shown last year, but does not appear to have been adopted on any other than the show model. This year's type is carried on the forward end of the engine, and consists of a small flanged air pumping cylinder, the piston of which is driven off an extension of the camshaft. From the pump the air is carried to a reservoir within the frame, where it is stored at a pressure of 60 pounds to the square inch. By means of a by-pass the air is admitted to the cylinders on pressing a lever; in the same way it can be employed for inflating tires. Some attention has been paid to the lubricator and the radiator has been so modified that to dismount it is now a very simple matter. It is reported that next season Renault will produce another large series of popular two-cylinder cabs of an improved type. In the industrial section the firm showed a 35-horsepower air-cooled eight-cylinder engine with the cylinders placed in V, said to be designed specially for aeronautical work.

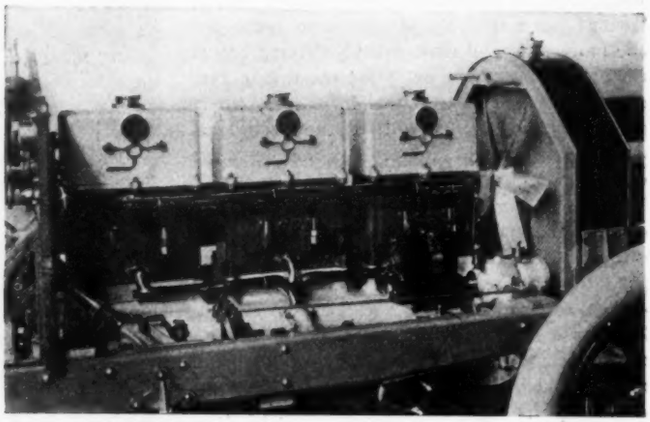
By abandoning both chain drive and armored wood frame, Panhard has produced a chassis departing considerably from those of previous years. Three-quarter elliptic springs are employed on the new 15-horsepower model, the tops of the springs being attached to the frame by means of brackets. Single cylinder casting is retained, but several new features are noticeable on the engine, most important being a sliding camshaft operating the exhaust valves, by means of which the engine can be used as a brake. The flywheel, instead of form-



NEW MODEL LIGHT DARRACQ WITH SINGLE PIECE CASTING.



INLET SIDE OF DELAUNAY-BELLEVILLE SIX-CYLINDER MODEL.



THE GOBRON-BRILLIE SIX MERELY MEANS AN ADDED UNIT.

ing part of the clutch, serves as a fan only, the ventilator behind the radiator being abandoned. The clutch is enclosed within a separate case behind the flywheel and immediately in front of the gearbox. The live axle is a particularly sturdy construction for a car of comparatively small power and should have none of the weaknesses sometimes attributed to this organ. On the larger chain-driven models a new self-starting device has been fitted, the arrangement consisting of an air pump working from the clutch shaft and compressing air into a tank from which it is admitted to the cylinders by means of a rotary valve.

An entirely new model has been produced by the Hotchkiss Company, designed specially for town use. The four cylinders are cast in one piece, with consequent simplification of piping and compactness of engine. A new carbureter has been produced, declared to give greater flexibility of the engine, and the now popular type of three-quarter elliptic springs has been adopted, other features being practically the same as on the firm's larger models of last year. Owing, it is declared, to the difficulty of obtaining ball bearings of uniformly good quality, the Hotchkiss Company has abandoned their use on the crankshaft of the new 20-horsepower town vehicle.

New six-cylinder cars have been produced by Delaunay-Belleville, the peculiarity of which is that the larger model, rated at 40 horsepower, has cylinders cast separately and a crankshaft with seven bearings. In the 15-horsepower six-cylinder model the cylinders are cast in two pairs of three, with valve chambers on one side and a single camshaft.

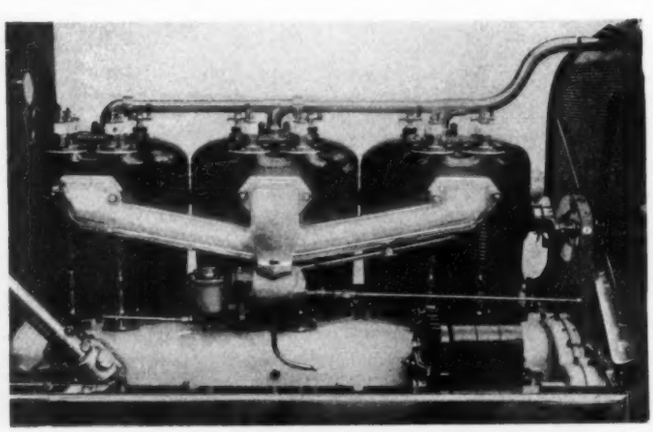
Prominent in the new Fiat model of six-cylinder engine is high-tension ignition by Simms-Bosch magneto in place of low tension. In this connection it is interesting to note that only six models of the seventy six-cylinder chassis at the show were fitted with low-tension magneto, among them being Brasier, Itala and Peugeot.

There are wide possibilities in the device to be found on the Berliet six for compressing air into a special tank at a pressure of 160 pounds, to be used in the cylinders whenever the motor has to be called upon to give extra power for a short period. The compression is done when the motor is running light, as when descending a hill, or when braking, and the compressed air can be communicated to the cylinders immediately on operating a small lever. There are several cases of gasoline electric cars for town service, having the advantage over those shown in previous years of a considerable saving in weight and size. One of the most interesting is the G. E. M., produced by a new company of which Girardot, formerly of the C. G. V. firm, is at the head. There appears to be a tendency towards the abolition of torque stays, utilizing instead a strong housing for the propeller shaft. There is an example of this in the new 12-16-horsepower four-cylinder Peugeot model. On this car also the side brakes are operated by the pedal and the brakes on the gearshaft by the side lever, thus relieving the bevels and differentials of many strains. To make the car suitable for drivers of different sizes, brake and clutch pedals are adjustable on the Peugeot.

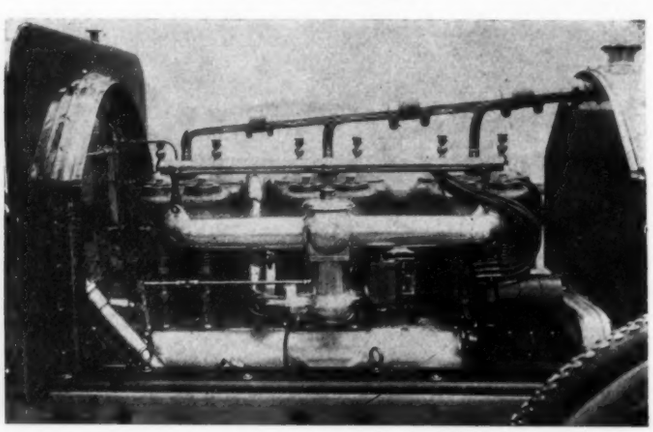
For originality in suspension the Stabilia chassis is in a class by itself. The entire chassis is underslung, both forward and at the rear, the rear suspension being of the platform type with the transverse spring at the forward end and not in the rear; it thus hangs above the frame members but below the propeller shaft and the rather original torsion rod.

Increased Attention in Commercial Vehicles.

Commercial vehicles shown in the industrial section show remarkable progress over the exhibits of last year, being more numerous in every class and generally a better set of vehicles. The older firms, having made a name for themselves in the



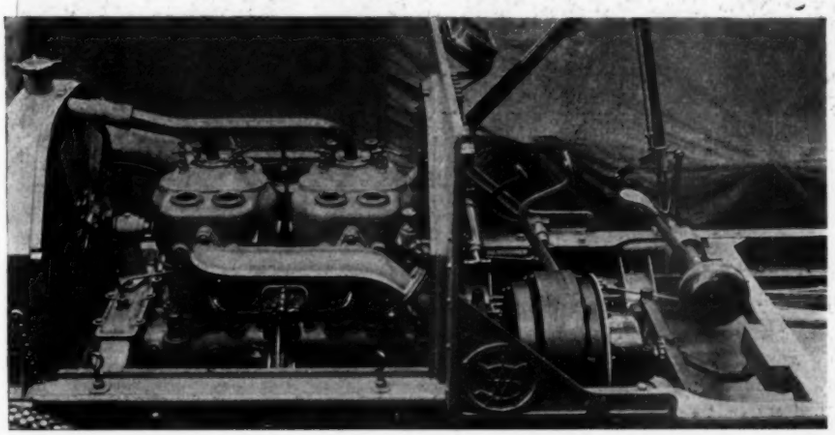
THE HISPANO-SUIZA, A SPANISH SIX-CYLINDER PRODUCTION.



CARBURETER AND MAGNETO SIDE OF THE NEW FIAT SIX.

pleasure automobile, are turning seriously to the commercial section, evidently realizing that whereas the field for high priced pleasure chassis is likely to become more restricted, the possibilities of automobiles for commercial purposes is practically boundless. Dietrich is one of those quite recently devoting a large amount of attention to the production of heavy trucks; Darracq has adequate representation in the Darracq-Serpollet combination; Panhard appears to be developing this class of business, and Renault is also paying some attention to motors for other than pleasure vehicles. The exhibition of this latter firm in the industrial section consists of a 10-horsepower cab, a 50-horsepower marine engine, a model of compactness, and the special eight-cylinder engine for flying machines. Panhard-Levassor has four distinct chassis for commercial vehicles, two of which are identical with their ordinary touring car chassis, and the other shaft drive with differential and gearbox on the rear axle. A 24-horsepower motor was also shown in motion with alcohol as fuel, linked up to a dynamo and arranged to show the power developed at all speeds and with varying fuel.

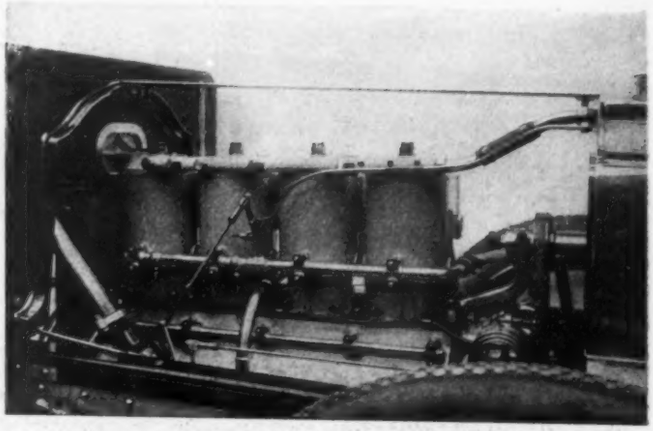
For the heaviest types of trucks there appears to be a tendency towards the use of six wheels, a solution of the heavy weight problem which has been before the public a long time but has never received full attention until now. Eugene Brillié has a vehicle of this type, as has also Dietrich, De Dion and Berliet.



MOTOR AND GENERATOR OF THE WESTINGHOUSE GASOLINE-ELECTRIC.

Effort is about equally divided towards the production of suburban 'buses carrying from six to thirty passengers, and the development of trucks and delivery vehicles. Trolley car services not being a very important feature in any part of Europe, there is a wide field open for reliable and economical 'bus services, similar to those at present in use in Normandy and other parts of France during the last two years. Gasoline omnibuses for city use also attract considerable attention, there being a big field for this class of vehicle in all the large cities of France, England and Germany. Steam does not find much favor here. One or two firms employ steamers for six to ten-ton trucks, but for all other purposes Darracq-Serpollet has the field practically to itself, from a mechanical standpoint, though in the business field pressed hard by the numerous powerful gosoline cars. Taximeter cabs, though certainly belonging to the commercial section, can be said to attach equally well to the pleasure field, for although the more important firms have designed special chassis for this work, as soon as they are found to be satisfactory they are adopted equally in the town pleasure carriages, the line of demarcation between the two sections being lost.

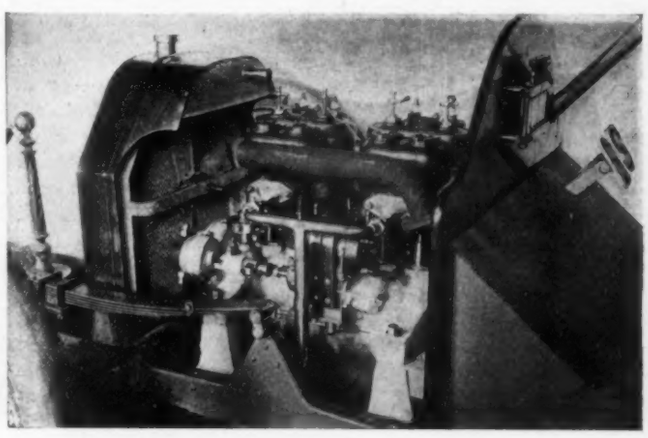
Standard lines of construction have been completely departed from in the Royal delivery vehicle, the peculiarity of which is that the entire motor group is carried slightly forward of the rear axle and transversely across the frame. It consists of a single-cylinder De Dion motor, a cone clutch, and selective transmission, drive being from the sprockets on the counter shaft to



OFF SIDE OF THE NEW DE DION FOUR-CYLINDER MODEL.

the rear road wheels. The power plant is exceedingly compact, one of the devices to save space being the cone spring within the hollowed shaft of the sliding gear shaft. With a wheel base of 96 inches, it has been possible to obtain a space of 71 inches for body between the axles, while leaving the power plant fully accessible. The driver's seat, which is raised to a considerable height, is at the rear of the chassis, but slightly ahead of the axle, the entire frame being suspended between the axles and not overhanging at either end. Below him, and on his left-hand side, is the engine, covered by a metal hood easily removable. Provision is made for easily removing the driver's seat, leaving the entire power plant as accessible as if it were on a shop bench. High-tension Bosch magneto is used on the engine, with fixed sparking point; engine speed can be varied from 500 to 1,500 revolutions a minute through variations of the exhaust lift by means of a foot pedal. Steering is through the front wheels, the connection being brought to the driver at the rear and operated by the usual inclined steering column and wheel.

It is perhaps only a small matter, but it is indicative of sound business policy, that automobile omnibuses should be employed very extensively in conveying visitors from all parts of the city to the show. By arrangements with the constructors a number of these vehicles have been placed at the disposition of practically all the newspapers and make journeys at regular intervals from the publishing offices or other central point to the Palais. The journeys are free for all and are appreciated by the public.

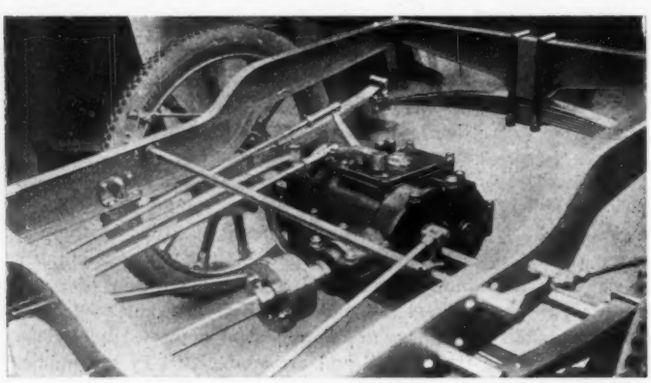


NOVEL FRONT SUSPENSION OF THE NEW STABILIA CAR.

CARS PARKED OUTSIDE THE GRAND PALAIS DURING THE COURSE OF THE SHOW.

EARLY PREPARATIONS FOR GRAND PRIX.

Rumors regarding next year's racing are plentiful in the salon, where all the most important drivers congregate, and where officials gather to talk over prospects for the coming season. According to the Fiat people, Nazzaro has already obtained the racer which he will drive in the Grand Prix of 1908 and is trying it out on the road. Although of 155 millimeter bore, compared with 185 this year, the car is said to be even faster than the winner of the race on the Dieppe circuit. Last year fuel consumption was limited, while for the coming race there is no limit. It is not known what is the length of the stroke, though it is admitted that it is very long, there being no limit to the stroke under the new racing rules. Rumors that Lancia would not drive again are incorrect. The team will be Nazzaro, Lancia and Wagner.



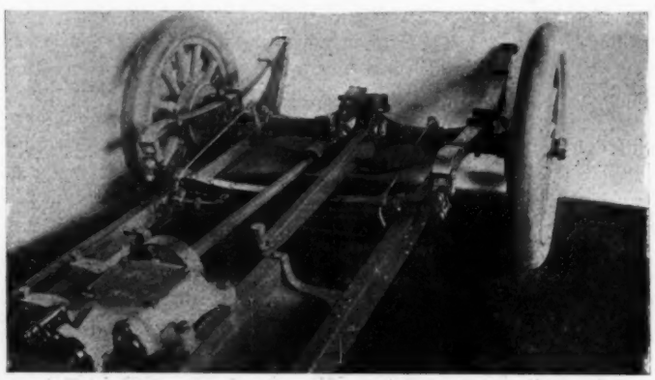
DOUBLE AXLE CONSTRUCTION CHARACTERIZING THE DARRACQ.

For next year Renault has secured the services of Gustave Caillois, who designed the Thomas cars for the last Vanderbilt race, and will entrust him with one of the Grand Prix racers. His companions will be Szisz and Dimitrievitch, the latter little known to the public, but thoroughly experienced in international races, having been the mechanic of Szisz for several years.

Théry, after two years of comparative idleness, has been induced to enter the Brasier team again and next year will have the leading car from the Trefle à Quatre factory, his companions being Baras and Bablot, both of whom drove in the 1907 race. Benz is building three cars, one to be driven by Hemery, the second probably by Hanriot and the third by a German. Mercedes will again race with Willy Poege and Salzer as drivers, Jenatzy retiring in place of some one yet to be chosen. Henry Fournier announces three cars for Itala, one of them to be driven by Cagno. Pipe also declares that three racers are building.

The Mors firm, after abstaining from all races for several years, announces officially that next year it will return to the most important events with Gasté and Landon as drivers and one other yet to be chosen. Bayard-Clément has put all doubt at rest by a declaration that next year the firm will be ready with three cars for the Grand Prix. It is M. Adolphe Clément himself who has made the statement, with the additional information that the new racers are already under construction, so that it may be accepted as accurate. Other firms known to be busy on racing cars are Motobloc, Germain, Dietrich and Panhard.

Persistent rumors are abroad that the Dieppe circuit will again be the scene of the national race. No official decision has been arrived at and nothing definite will be known until about the middle of January, but it is so strongly felt that the Dieppe course is the only one on which the race can be a success that all are convinced the club will not search further.



UNDERHUNG REAR SUSPENSION AND TORSION ROD OF THE STABILIA.

WELLMAN CONFIDENT OF FLYING TO THE POLE

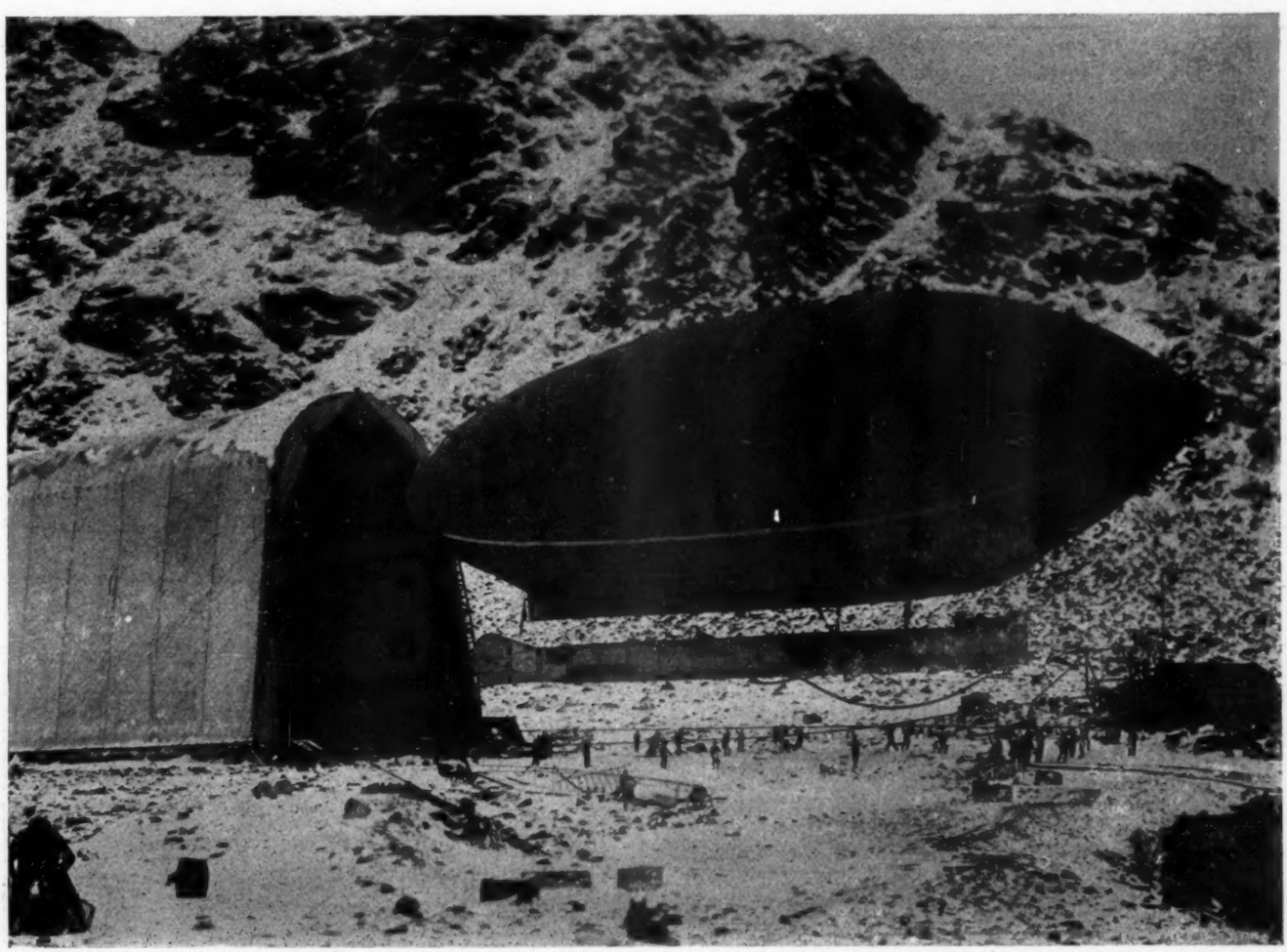
WELLMAN AND COMRADES'
Vaneman (on the left). Reisenberg (on the right).

UNDETERRED by his failures of the past summer, and still optimistic of the possibilities of reaching the North Pole with the aid of a dirigible balloon, Walter Wellman has returned to this country, reaching here on the *Majestic* on Thursday last. Mr. Wellman was not of the opinion that the summer had been wasted by any means, as, in addition to having demonstrated what his airship, the *America*, can do, he has a well-established plant and ship ready for the renewal of the campaign next year or the year following, and will be able to dispense with a great deal of preliminary work that would otherwise be necessary before undertaking the polar voyage.

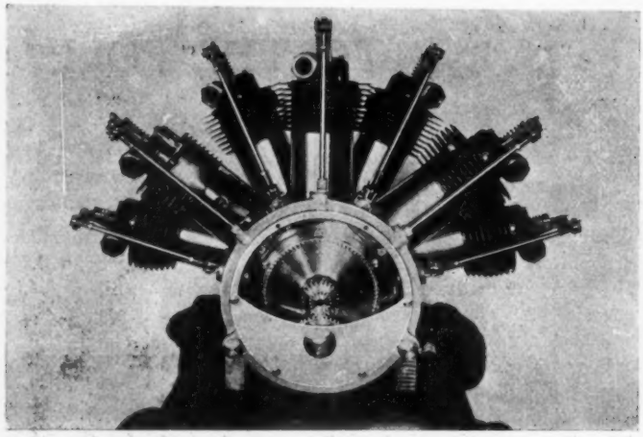
Speaking of his trials of the airship itself, Mr. Wellman was confident that his basic plans were correct and that only slight modifications in the mechanism of the dirigible balloon would be necessary. "The *America* proved strong and stable and her speed was much greater than we had counted upon," he said. "We had very little opportunity for trials, as the summer in Spitzbergen this year was the stormiest and most unfavorable for an expedition like mine that has been experienced in many years. The trial of September 2 was not a successful voyage in any sense of the word, but proved a successful test of the *America*. We had an opportunity to test our retarder as well as our guide rope of leather stuffed with food. Both proved efficient beyond our expectations. Granted the proper conditions, which means a southerly wind above all other things, we will no doubt have an opportunity to take advantage of these devices while over the pack ice and our chances of making a successful trip to the pole and back are more than good."

While sojourning in Spitzbergen, engrossed in the work of preparation for his trip, Mr. Wellman has found time to closely follow aeronautical developments in the interim, and was particularly enthusiastic over the possibilities of the balloon as a weapon of warfare. "It is gratifying to note that the American Government has at last come to a realization of the situation, as what has been accomplished in Europe plainly demonstrates that such an aerial ship could inflict millions of dollars' damage upon an enemy.

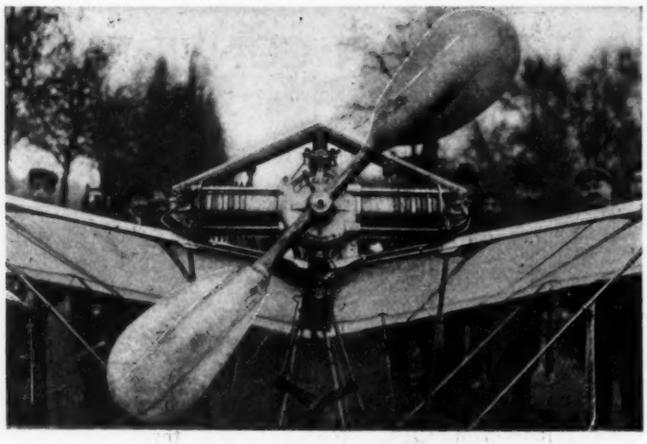
ONE OF THE PROPELLERS.
Vaneman standing alongside the upper blade.



THE "AMERICA" LEAVING THE AERODROME ON THE DAY THE EFFORT WAS MADE TO REACH THE NORTH POLE.
Photographs by Underwood & Underwood, New York.



PELTERIE'S SEVEN-CYLINDER MOTOR, SHOWING CAM MECHANISM.



MOTOR AND PROPELLER FOR SANTOS-DUMONT'S FLYER.

NEW AEROPLANE FOR SANTOS-DUMONT.

PARIS, Nov. 19.—Instead of being wholly engrossed in experiments on the water with a view to obtaining a speed of 60 miles an hour, Santos-Dumont has surprised the public by producing an entirely new aeroplane and getting it rapidly into commission preparatory to a trial for the Deutsch Archdeacon prize.

No. 19, which has already been dubbed *"The Butterfly,"* because of a slight resemblance to that insect, is smaller and lighter than any of its predecessors and constructed on entirely new lines. The main chassis is formed of steel tubes, mounted on three rubber-tired wheels, two forward and one in the rear. The main bearing surface, as will be seen from the illustration, consists of a couple of lateral wings, 17 feet from tip to tip and 7 feet from front to rear. These two wings are covered with varnished silk, their framework being of bamboo. The steering and stability organs are a couple of vertical rudders placed slightly forward and to the left and right of the wings, a horizontal elevating rudder in front of the machine and a rear rudder mounted with a universal joint and capable of being turned in any direction. The total weight of the apparatus is 128 pounds.

One of the most interesting exhibits in the aeronautical section of the Paris Salon is the seven-cylinder motor designed by Robert Esnault-Pelterie for use on his own flying machine and now offered to the public. With a total weight of 108 pounds, it has been possible to obtain 35 horsepower under French rating. The cylinders, which are air-cooled, are attached to a circular crankcase, the two at each extremity forming a group, and the exhaust valves in the cylinder heads are operated by an ingenious circular series of cams.

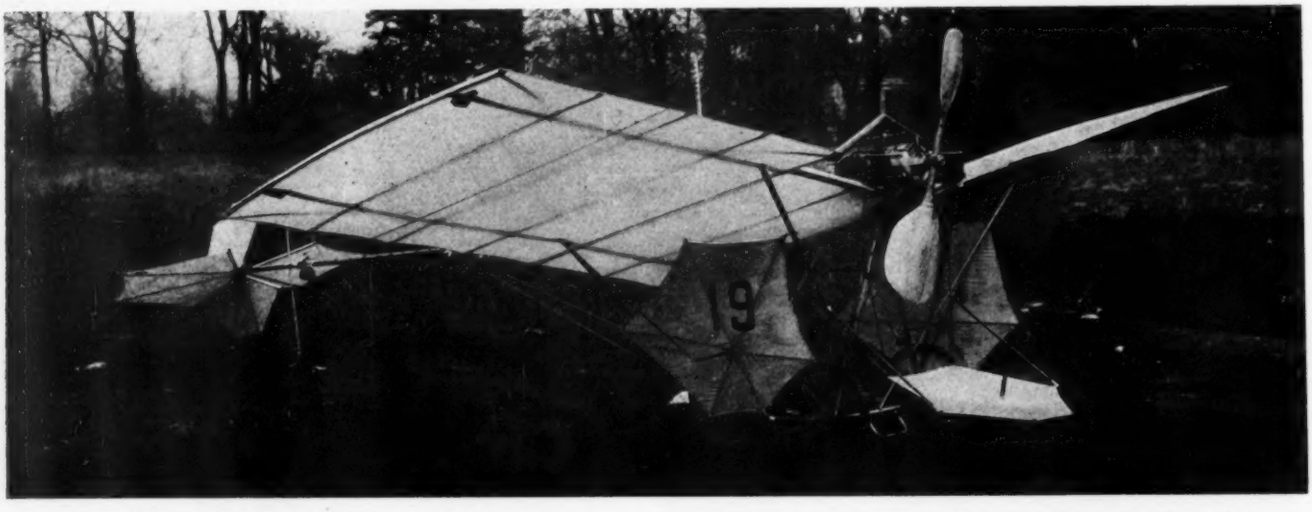
THE AERO CLUB OF NEW ENGLAND.

BOSTON, Nov. 25.—The Aero Club of New England, which was organized in a temporary way several years ago, and which has since lain dormant, was formally organized by the election of officers at a meeting held in this city last Thursday evening. The club also received a communication from the Massachusetts Automobile Club inviting it to make use of its clubhouse for meetings until it should have a clubhouse of its own. The announcement was also made of the offer of a silver trophy for a balloon competition, the finish of which shall be Boston Common. A. Lawrence Rotch, director of the Blue Hill Observatory, was elected president. The other officers are as follows:

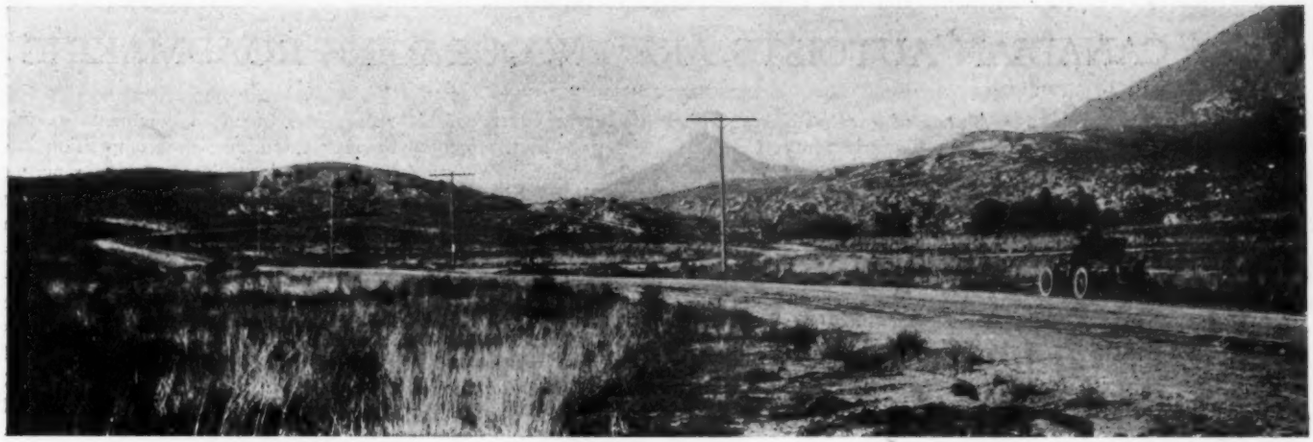
Vice-presidents, Charles J. Glidden and Frank E. Stanley; secretary, Alfred R. Shrigley; treasurer, Harry G. Pollard; directors, President Rotch, Charles J. Glidden, Henry Howard, George E. McQuesten and T. E. Byrnes. The incorporators are thirty-seven in number.

AERONAUTICAL CLUB FORMED IN CHICAGO.

CHICAGO, Nov. 25.—Incorporation papers for the Aeronautique Club of Chicago were taken out on Friday of last week. The new organization has the backing of several business men and will seek to promote the sport actively in this city. Contracts have been let by the club for the building of a $1,500 balloon, and plans are under way for a series of races next spring, the first to be sailed on Memorial Day and the last July 4. A $1,000 cup has been pledged to the club as a trophy. C. A. Coey is president of the club, Charles E. Gregory first vice-president, A. B. Perrigo secretary, and H. C. Foster treasurer.



"THE BUTTERFLY," NINETEENTH AEROPLANE CONSTRUCTED BY SANTOS-DUMONT SMALLER AND LIGHTER THAN PREDECESSORS.



BOX SPRINGS GRADE, RIVERSIDE, CALIFORNIA, WHERE THE ANNUAL THANKSGIVING DAY HILL CLIMB WILL BE HELD.

SOUTHERN CALIFORNIA'S ANNUAL CLIMB.

LOS ANGELES, CAL., Nov. 22.—Southern California's annual Thanksgiving Day hill-climb over the Box Springs grade, Riverside, will be a bigger event this year than ever before. The list of entries exceeds all former records, and they are still coming in. The course has been put in first-class shape, and with a few of the sharper turns cut down the record of 4:53 for the three miles is certain to be lowered.

Riverside is sixty miles from Los Angeles, but a majority of the entries come from this city, the autoists running up the evening before. The road between the two cities is one of the most beautiful in the southland, and hundreds of machines line the course to see the cars make the climb. Last year the honors were won by a Tourist, Cadillac, Stevens-Duryea, and Maxwell.

The hill is such as only some of the far Western States can provide for such an event and to the cars of but a few years ago would have been next to impossible at anything that could be termed speed. With the experience of last year's climb fresh in mind, the course has been improved in a number of ways, promises being bright for the most successful event held in California.

ORMOND-DAYTONA LAST WEEK IN MARCH.

The Florida East Coast Automobile Association, through its New York representative, W. J. Morgan, has made arrangements for co-operation with the Automobile Club of America in connection with the conduct of the annual Ormond-Daytona meet, which will probably take place the last week in March. The A. C. A. Contests Committee, of which Robert Lee Morrell is chairman, will make up the list of events, to include three principal races, one for strictly racing cars, another for stock cars, and a third for amateur drivers. The mile race for the Sir Thomas Dewar trophy will also take place, the entrants being confined to cars which will be required to qualify by going at least twenty miles at a minimum speed of 45 seconds to the mile. Mr. Morgan and a member of the A. C. A. committee will leave for Florida this week to complete final arrangements for the meet.

Mr. Morgan, who is the originator of the "Climb to the Clouds" up Mount Washington, announces a series of trials to take place in the White Mountains during the last week in June, the sixth day to be devoted to the eight-mile climb of Mount Washington.

FUTURE EVENTS SCHEDULED ON THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

Nov. 30-Dec. 7..—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.

Dec. 9-14.....—Detroit, Riverview Park Auditorium, Detroit Automobile Dealers' Association. LeRoy Pelletier, manager.

Dec. 14-21.....—St. Louis, Mo., Jai Alai Building, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association. D. M. Strauss, manager.

Dec. 28-Jan. 4..—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, manager.

Jan. 14-18.....—Hartford, Conn., Foot Guard Hall, Hartford Automobile Dealers' Association.

Feb. 1-8.....—Providence, State Armory, Automobile Show. Frank M. Prescott, manager.

Feb. 10-15.....—Detroit, Light Guard Armory, Tri-State Automobile and Sporting Goods Association, Seventh Annual Show.

Feb. 17-22.....—Cleveland, Central Armory, Annual Show, Cleveland Automobile Dealers' Association. George Collister, manager.

Mar. 7-14.....—Boston, Mechanics' Building and Horticultural Hall, Boston Automobile Dealers' Association. Chester I. Campbell, manager, 5 Park Square.

Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dai H. Lewis, manager.

Mar. 21-28.....—Toronto, Canada, St. Lawrence Arena, Automobile Show. R. M. Jaffray, manager.

Apr. 5-12.....—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Motor Boat Shows.

Dec. 7-14.....—New York City, Grand Central Palace, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.

Jan. 1-8.....—Chicago, Coliseum, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.

Jan. 25-Feb. 1..—Boston, Mechanics' Building, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.

Feb. 3-8.....—Buffalo, Convention Hall, First Annual Power Boat and Sportsman's Show, auspices of Buffalo Launch Club. Dai H. Lewis, manager.

Feb. 20-Mar. 7..—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsman's Show.

FOREIGN.

Shows.

Nov. 22-30.....—London, Agricultural Hall, Stanley Show.

Dec. 5-22.....—Berlin, Germany, Automobile Show.

Dec. 21-Jan. 2..—Brussels, Show, Palace of the Cinquantenaire.

Jan.18-Feb.2,'08—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Mar. 21-28.....—London, Agricultural Hall, Cordingley's Show.

HOW CANADIAN AUTOISTS ARE ENCOURAGING ROADMAKING

TORONTO, ONT., Nov. 25.—A prize of $500 has been awarded by the board of directors of the Ontario Motor League to the township of Etobicoke for the improvement made on a mile of the Lake Shore road extending west from the Humber river to Mimico creek. Another prize of $100 was awarded to the township of Markham for improvement made on a mile of the main road running north from the village of Markham. Further prizes of $50 and $25 respectively were awarded to the supervisors in charge of the work on these roads.

The awards were made on the recommendation of A. W. Campbell, Ontario good roads commissioner, and the chairman of the committee of judges for the good roads competition, which was inaugurated by the Ontario Motor League last spring, and the funds for which were subscribed by Toronto members of the League. The other judges were William Dobie, of Toronto, on behalf of the League, and William Pugsley, representing the county of York.

In an exhaustive report to the League, Mr. Campbell commended very highly the work that had been done by the Etobicoke township on the Lake Shore road. It is understood that the total sum of $4,000 was expended. The improvement included the laying of a foundation twelve feet in width throughout the length of the road, consisting of eight inches of flat rock over which another foot of broken stone was laid, and the whole covered and rolled with road rollers.

In all, eleven miles of road were entered in the competition by six municipalities. While all of these were not finished in time, the directors are well satisfied with the results of the competition. One of the sections entered was Dundas street.

The section of the road which earned the first prize was the worst piece of road between Toronto and Hamilton. The directors consider that the stimulus given to Etobicoke township has been an important step in securing a good road along the Lake Shore to Hamilton and the Falls.

In the course of his report Mr. Campbell comments as follows: "In the opinion of your committee, the competition has done much to awaken a more intelligent interest in the matter of road-making and road-expenditure. In nearly every section where entries were made keen interest was manifested and much attention directed to the subject, which will be of lasting benefit. During the carrying out of the work the fundamental principles of road-making, heretofore largely lost sight of, were closely observed and their benefits appreciated. Implements were used in forming the roads, preparing the material and applying it to the work which have been read about but not used by rural municipalities. The necessity for such implements and the importance of observing the principles laid down in the rules of your competition have been so forcibly impressed upon those in charge of the work as to have formed a text-book for their guidance, and have so impressed these axioms upon them that we have no hesitation in saying that as object lessons to guide the work of the future in these localities a valuable service has been performed.

"Good roads are largely a question of cost. The greater the expenditure the more rapidly can the highways be improved. By adopting the best and more efficient methods the cost can be reduced. Proper principles of construction, the preparation of suitable materials and the knowledge of the quantity required and its proper application to the road surface, and the formulating of the system for the care, protection and maintenance of roads, once properly made, form the text which your committee feel should be urged upon the attention of all those in charge of our road management."

The only other highway outlet from Toronto in need of improvement is the Kingston road, and it is probable that the Ontario Motor League will take steps next year to have the Norway hill, which has been in a very bad state for a number of years, put in good condition.

PROMISING CONDITION OF AUTO INDUSTRY IN CANADA

TORONTO, ONT., Nov. 25.—Present conditions in the automobile trade in Canada seem to indicate a favorable amount of business for the coming year, considerable in excess of that done during the past year. All of the cars represented in Canada this year, most of them American makes, will be represented next year, while there are a number of additions to the field. New manufacturers are also springing up.

One of the most notable additions to the automobile manufacturers in Canada is the McLaughlin Carriage Company, the largest carriage concern in Canada, which has been in business for upwards of fifty years. This concern is capitalized at $1,500,000, and has just completed arrangements to manufacture an American make of cars in Canada. The company began experimenting in the automobile business a couple of years ago, the intention at first being to produce a new type of car. Large additions to the plant have already been erected and the necessary machinery installed.

The Canada Cycle & Motor Company, manufacturers of the Russell car, are turning out 400 cars for the coming season. The Russell is well known in Canada and has an established sale. It is purely a Canadian car and has been on the market some years.

The Chatham Motor Co., of Chatham, which began business this year, state that they will produce 125 cars next year. The Chatham is also a Canadian type of car.

The Comet Motor Company will next year considerably increase its output. The company makes a car of European design called the Comet. This car ranks with the high-class cars made in Europe and retails in this country at $5,000.

The Ford Motor Co. of Canada, Walkerville, Ont., is specializing on the Ford four-cylinder runabout, which it will produce in considerable quantities. This company has opened a selling branch in Toronto, where they have a garage 60x120 feet.

The Olds Motor Works of Canada has moved its sales headquarters, in charge of Frederick Sager, to Toronto, where it occupies large new quarters.

A new manufacturers' concern just incorporated is the Toronto Automobile Co., which intends to build a plant at Port Arthur. It is capitalized at $100,000.

Among dealers the Dominion Automobile Company, of Toronto, Montreal and Winnipeg, will specialize on the Packard, Maxwell, Stevens-Duryea lines. The Automobile & Supply Company will handle, among other lines, the Pierce, Stoddard-Dayton, and Royal cars. Hyslop Bros., who have erected a new garage, will continue to handle the Darracq and the Cadillac. The Standard Automobile Company is a new concern which will handle the Peerless and Chatham cars.

In Montreal the Eastern Automobile Company will handle the same lines as the Dominion Automobile Company in Toronto. W. P. Kearney will sell Darracq and Olds cars. The Wilson Automobile Co. will sell Pierce, Franklin, Buick and Humber cars, and the Automobile & Import Co. the Reo. Other agencies are now being arranged for the coming year.

Clothed to Enjoy Winter Outing

By Laura B. Seiple

READY FOR THE OPERA, WITH COAT OF WHITE CONEY.

HAPPILY automobile fashions for cold weather have reached saner proportions than autumn styles boasted. All the superfluous furbishings that a short time ago were high in vogue have disappeared from garments designed for the woman of discriminating taste. Such details as were found a hindrance rather than comfort have been eliminated, and apparel for use in the automobile has assumed practical styles in general. Fashion autocrats are directing more attention to lines than to ornamentation; as a result the fur or leather garment that once was heavy and awkward is now transformed into a fashionable outer wrap; so perfect in style and finish that it may be worn on almost any functionary occasion where such demands are made. Furs, leather, and cloths of lighter weight but of no less warmth have supplanted heavy materials that made the motor coat a clumsy burden.

The well dressed woman who rides in an automobile chooses her apparel for the pleasure with as much care as she exercises over her handsomest evening raiment. She never loses sight of the fact that she must be warmly as well as becomingly clad. And with the great diversity of fascinating styles at her disposal she may own an outfit becoming to her particular style, and not depart so very far from what her personal fancy dictates. Capricious styles in coats and head coverings are many and varied. And one may wear just about what she prefers so long as she keeps within certain bounds of conventionality. On the other hand, if one desires extreme simplicity in the matter of dress there is also a wide range of attractive styles from which to make choice.

Furs of Every Description for Automobiling.

Furs of almost every description are now being employed in the making of automobile wear. Of the new pelts initiated for the purpose during the past year, Russian pony is perhaps highest in favor. A successful process in treating the skin renders it soft and glossy, resembling, as it does, broadtail or baby lamb. When finest selected skins are used the appearance is so deceptive that often the garment is admired under the name of baby lamb, the observer not appreciating the difference even at close range. The accompanying illustrations include a long coat of choice skins of which only the small moiré markings are used. The luxurious black lynx shawl collar and sleeve garnishments add much to the attractiveness of this sumptuous garment. Fancy metal buttons decorate the double-breasted front. A full satin lining finishes the inside.

Very stunning is the natural seal coat, with Gibson effect shoulders and picturesque hood lined with soft gray leather, which same material again appears on the sleeves. The hood may or may not be used, but for stormy weather it makes a capital head covering, protecting the face, as shown in the reproduction. The same style coat may also be had in sable marmot at lower cost than this superb garment commands. Going from one extreme to the other in the realm of fur coats, let me inform my readers that there is a splendid example of what can be done with inexpensive furs in a full length coat of wombat, and, cheaper still, is a black dog skin coat. These garments receive the same amount of workmanship in the cut and finish as do those many times exceeding their cost. A very comfortable one may be had as low as $35.

Leather Has Lost None of Its Prestige.

Leather has lost none of its former prestige. Many of the season's smartest coats are fashioned of Scandinavian leather lined with light weight fur of one kind or another. If there is any preference given to color it extends towards olive green, although one sees leather coats in nearly all the fashionable dark tones. The Empire back is liked for this particular garment, the probable reason being that the weight then swings from the lower part of the yoke or baby waist, and not from the shoulders, as is the case in wraps cut on long, unbroken lines. The photograph pictorially describes the style referred to. This particular model is lined with marmot. Other leather coats in tan, red, gray, black, and blue-gray are attractively lined with genette, which reduces the cost somewhat.

Automobile coats in cloth present many models for purchasers to select from continually, as this class garment is in demand the year through. Of these a number of stunning coats have appeared in two-inch block checks of tan and brown. Running down the back is a bias seam, the shoulders well fitted and flaring, and from a few inches below the shoulder line is an outward spring, which affords ample roominess below the waist-line, continuing to the bottom of the hem. Stitching is the simple finish on the edges of the two-inch strap of cloth that covers the back seam. Tailor stitching also finishes the sleeves, and often the two open fronts. From six to nine buttons, according to size, are required for the front fastening, and these are either of metal or leather covered. Any light weight fur may be employed for

NATURAL SEAL, WITH HOOD

Courtesy Scandinavian Fur & Leather Company

RUSSIAN PONY, BLACK LYNX TRIMMINGS.

lining, but the same color scheme must be faithfully carried out to keep the tout ensemble intact.

On a wonderfully stylish coat of blue and green plaid cloth the seams are finished with a strip of green broadcloth stitched twice on the edges and ending in points covered with crow's feet embroidered with heavy silk. A single box plait laid in the middle of the back and stitched on the sides gives a swagger finish to the bias cut. From the upper side seams spring two circular sleeves or deep caps lined with green satin corresponding with the green inner lining of the coat. The corners, both back and front, of this cape-like sleeve are turned back into two small triangles finished with a cloth button on the extreme points of each. A wide turn-down collar of green cloth lined with satin finishes the high neck where it closes with a stitched tab. Two-sided cloths of unusual thickness enter largely into the making of simple automobile coats. They come in a large variety of charming color combinations. One of the favored is in tan with a green stripe about three inches apart. Fur collar and cuffs complete cloth garments of this character, raccoon being much used.

SCANDINAVIAN LEATHER, FUR LINED.

One of the most recent creations introduced by representative makers of smart apparel for motoring is a fifty-four inch white Coney coat lined with white satin and ornamented down the double breasted fronts with fancy metal buttons. Such a garment may be worn to the opera or any other functionary gathering, and is one of the most sensible investments found in dressy wraps for every occasion. Accompanying this simple but elegant coat is a voluminous head covering made of chiffon and mousseline and having the attributes of the most exaggerated French hood, so far as becomingness is concerned. Besides it is wonderfully comfortable in extremely cold weather. The same model is made with fur lining, which will render it sufficient protection in severest weather. Long leather boots lined with genette or muskrat cover the evening slipper and close with patent clasps, making them easy of access and most comfortable over sheer silk hose and low-cut shoes.

Accessories of all kinds were never more varied. The average woman considers her hat, veil, gloves, and bag as much a part of her outfit as she does her coat. To own the most attractive details in dress for the use, one must examine all the new accessories that are brought out from time to time, and there are many. If you would save much time, it is advisable to patronize a reputable importer and manufacturer, where you may have your clothing matched up with the small fixings he will show you. There are numerous small dealers who fancy there are endless amounts to be realized in automobile apparel, and he will offer you all sorts of ridiculous articles, telling you at the same time they are imported from foreign marts, when in truth he has been sitting up nights trying to perfect something different. Very ridiculous are many so-called novelties that he exhibits. Any number of milliners have brought out absurd styles in headwear for which they ask enormous prices, and once you wear them you find their service lacking in almost every necessary essential for which they are intended.

SILVER WIRE SHIELD FOR LIPS.

If you do not feel that you care to purchase a handsome fur coat or leather dress, you can ride in bitterest weather in your street costume and furs with a chamois skin jacket under your coat and a leather bag lined with fur covering your limbs and hips. The particular bag that seems to meet all requirements is of black Scandinavian leather lined with opossum. This style opens at the side and may be released by pulling the clasps.

Hats vary in style and price, just the same as picture hats do. One may admire a blended muskrat cap with coquettish little brim and find it vastly becoming, while, on the other hand, one might see a sealskin hat of more attractive lines and find it impossible for the desired use. A shape with slightly full crown and visor front and back in blended muskrat is only $10, while the same style in seal is $35.

A vastly becoming little creation from Paris is in golden brown pony skin, and is featured among the newest innovations on account of the detachable hood that accompanies it. The model is fashioned after the shape of a close-fitting toque that may or may not be trimmed with aigrettes or quills or even velvet rosettes. When a touch of contrasting color is desired a bright wing adds just enough life to the soft brown fur to make it attractive.

Many persons suffer from dust and cold air penetrating the throat and lungs through the mouth. To overcome this unpleasant feature of automobiling there is a clever little silver wire screen mounted on an oval frame and attached to elastic cords which hold the protector in place. The illustration will give an idea of the position the mouthpiece takes when adjusted. Another innovation recently brought to light is the mica window with wire attachments for clasping to the hat or cap.

LETTERS INTERESTING AND INSTRUCTIVE

DID FREEZING CAUSE THIS JACKET LEAK?

Editor THE AUTOMOBILE:

[982.]—Our first freeze of the winter caught me with my raiator and all pipes full of water. The result, a cracked cylinder. I have examined it, and find that the crack is in the outer jacket only, and does not affect the compression. It, therefore, allows the water to spurt out, and I cannot use the car. I have a two-cylinder car, and the crack is near the end of the cylinder at the valve. Now, is there a fireproof cement that I could use to stop up the crack and make it water-tight? I might cover it with a metal paste were it not for the curved surface, which would make it pretty hard to completely cover. Kindly enlighten me. I have made the statement above that freezing is responsible for the crack. It may be that I am mistaken in this. My car was stuck fast for three days after the hard freeze, and it was impossible for me to turn the engine over. Finally it thawed out and I then drained all the water out and started the engine, and it ran for a very few minutes, not long enough for it to heat. Satisfied with things, and without making a thorough investigation, I left the car for the day, returning the next day and filling the radiator, cranked her up, and got a shower bath. Did the freeze crack the cylinder, or did my starting it up and causing the explosion in the chilled cylinder cause the crack? I don't believe this caused it, or it would have cracked the cylinder through and through, would it not?

Ft. Smith, Ark. IGNORANCE.

There appears to be little doubt but that the freezing was responsible for the cracked water jacket, the difficulty in turning the engine over probably being due to the fact that the lubricating oil bound it at the low temperature. It is a peculiarity of breaks in wrought iron pipes caused by freezing that they do not always make themselves visible the moment water is sent through the pipe, so that a superficial examination would fail to reveal them; in fact, we have seen a case where the pipe stood a pressure of 10 to 15 pounds for almost half an hour before giving way, though when it did, the pipe opened more than 1-16 inch for fully three feet. This may be true of castings also.

Take a file and clean the metal round the break for 1-4 inch or so, and then apply a paste composed of one part salammoniac in powdered form; two parts flowers of sulphur, also powdered. and eight parts of fine iron filings. Mix with water into a paste thin enough to work into the crack easily, but still with sufficient body to stay where placed. This paste should be worked into the opening very thoroughly, and if it be possible to reach it from the inside so much the better; after filling the break, spread the paste over the cleaned outer surface about 1-8 inch thick. As this depends for its efficacy on rust binding the mass of filings and the broken surfaces, it must be allowed to stand for two or three days before using.

REGARDING SECONDARY CONNECTIONS.

Editor THE AUTOMOBILE:

[983.]—Being a subscriber of "The Automobile," I take the liberty of asking you the following questions: There being two terminals to every secondary winding of a spark coil, one leads to plug and what becomes of the other? Is it grounded on the primary circuit? If not a trade secret, what is the composition of the friction surfaces of such cars as the Cartercar and Lambert? Is there a car made that has friction transmission with direct (no friction) shaft drive on high speed? W. C. BALL.

Kalamazoo, Mich.

One side of the primary and one side of the secondary of all high-tension wiring systems as employed on the automobile are grounded, or, to put it in another way, have a ground return in order to save wiring. To simplify the coil connections the secondary and primary are often connected, making a common ground wire for both.

We believe such cars as you mention employ an aluminum facing on the stationary friction disk and a special paper composition on the sliding friction wheel. The latter is probably a trade secret. The Gearless car, which employs what is virtually a friction planetary gear, has a direct drive on the high speed.

WHAT IS WRONG WITH THIS WIRING PLAN?

Editor THE AUTOMOBILE:

[984.]—I have a two-cylinder car. I have just bought a new coil (Pittsfield) for it. I enclose a diagram of the way I have wired it; have I got it right? I have only one battery wire running back to the coil. The other one goes to the transmission gear box for a ground wire, two wires to the plugs, and two to the timer, and it doesn't seem to work just right. Can you let me know through "The Automobile" if I am right? If I am wrong, could you give a small diagram in "The Automobile" of the correct way?

New York. C. W. B.

You do not state whether you have made a ground connection from the coil or not, as one side of both the primaries and secondaries of both coils should be grounded to form a return path for the current. This ground connection is usually combined in one wire, the necessary interconnections being made on the interior of the coil box by the makers. Otherwise your diagram is correct, on which account we have hardly thought it necessary to reproduce it here. However, we think you could find a better ground connection for the battery than the gear-set housing; we should take this wire to some point on the frame or motor as near the timer as possible, as poor ground connections are often responsible for much ignition trouble.

DIMENSIONS FOR A FOUR-CYLINDER MOTOR.

Editor THE AUTOMOBILE:

[985.]—I am going to build a new engine for my car and would like to learn through the columns of your paper if I am on the right track before going ahead. I have taken your paper, and I think it is the best automobile paper that I have ever read. If there is anything wrong with the measurements given below, I would be very much pleased to have you correct them.

Four-cylinder, 4 x 4 inches.

Connecting rod, 8 inches.

Valves.—Exhaust, 1 5-16 inch. Intake, 1 1-4 inch. Lift, 5-16 inch.

Crankshaft, 1 3-8 inch. Two-inch bearing between each cylinder and 4-inch bearings at ends.

Piston, 5 inches long. Three rings 5-16-inch wide. Wrist-pin set 2 27-32 inches from top of piston.

Copper water jackets. What should the water space be around the cylinder? Would 1-inch space over top of cylinder and around valves be too much? What should the thickness of the cylinder wall be? What should the volume of the compression be? What should the weight and diameter of the flywheel be?

Woodstock, Ill. A READER.

We think the design of your motor could be considerably improved by making the valves both 1 1-2 inches in diameter, and 1 5-8 would be better, with a corresponding decrease in the lift, which could be reduced to 7-32, or at most 1-4 inch. We should increase the crankshaft to 1 1-2 inches, and here again a still further increase to 1 5-8 inches for this essential would provide a much higher factor of safety and make a better motor. The bearings are also too small; we should use a 5-inch bearing at the flywheel end, with a 3 1-2-inch bearing at the opposite end and 3-inch intermediate bearings. We hardly think the dimensions you give for these would prove at all satisfactory in practice, as is evident from the liberal bearing dimensions given by a number of prominent motor builders. With a copper water-jacket less water would be required than with the usual cast-iron integral jacket and a 5-16-inch space should be sufficient, with a 3-4-inch space about the valves and over the head. One inch would doubtless prove excessive for this, assuming, of course, a normally efficient circulating system. The cylinder walls should be 5-16 inch and doubtless the average foundryman would not care to undertake to make them any thinner than this and guarantee the result. Making the compression space 30 per cent. of the total volume displaced by the piston would be approximating standard practice in this respect. A 16-inch flywheel, weighing 100 pounds, the greater proportion of this weight being in the rim, would give a very steady running engine; if

necessary to give greater clearance or for other reasons, the diameter could be reduced somewhat, keeping the weight the same. None of these dimensions is arbitrary or absolute and doubtless nine out of ten designers would modify them in some way or other, but the uniformly excellent results obtained from standard motors of the foregoing proportions, as well as from dozens of others which differ in various ways, shows that success in motor building is not merely a matter of following hard and fast rules.

AN ACCIDENT THAT WAS UNAVOIDABLE.

Editor THE AUTOMOBILE:

[986.]—I am enclosing you a rough diagram of what well may be termed an "unavoidable accident" that I witnessed on Broadway this morning. An untoward combination of circumstances made all ordinary precautions on the part of the drivers useless. The incident is of interest as illustrating the multitudinous dangers of city traffic. When first observed, A was running south on Broadway alongside the street car indicated, also proceeding in the same direction. At that time B was half a block or more east on Sixty-second street, coming toward Broadway. An excavation in the center of the street is indicated by the irregularly shaped, shaded portion. The driver of A could not see anything issuing from Sixty-second street as the parallel-moving street car obscured his vision in that direction for an entire block. B could not see A for the same reason. Just as B reached the crossing, the street car came to a sudden stop and B, seeing his opportunity, passed in front of it, only to collide with A. The damage was confined to smashed lamps owing to the low speed at which both cars were traveling, and B was the one that suffered.

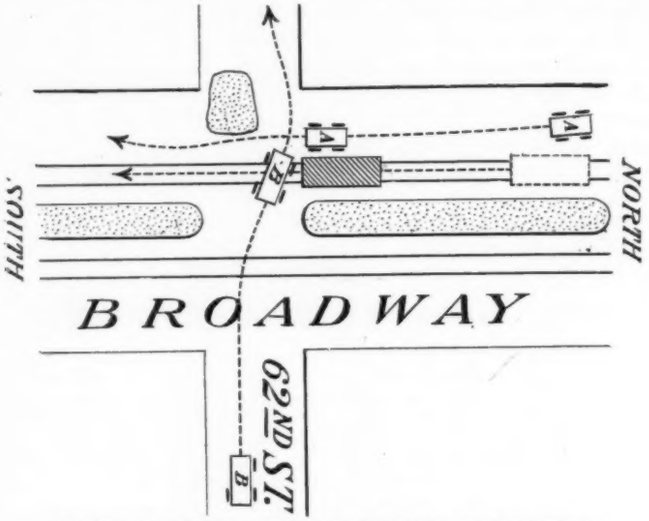


DIAGRAM SHOWING SITUATION OF CARS THAT COLLIDED.

A. L. WESTGARD.

New York City.

WHAT ONE AUTOIST WANTS TO HAVE PRINTED.

Editor THE AUTOMOBILE:

[987.]—I want to thank you for your "1,000 Miles of New England," published November 7, in "The Automobile." It is this kind of articles that appeal to the practical autoist. I have taken for four years eight different automobile publications, and, if my memory serves me right, this is the second or third American article published. We have had trips through Italy, touring through France, autoing in England, etc., etc., finely illustrated and descriptive in character. We are told how to build cars, and the science of automobile construction has been detailed ad nauseam. Every automobile race and hill-climbing contest has been given in detail, but nothing practical for the everyday motorist. We live in foreign lands and all of our manufacturers are trying to see how near they can copy foreign cars. But the American spirit lies dormant.

Do not our publishers and manufacturers realize that some of our craft are "stay at homes" and are pining for domestic food? Less than 5 per cent. of autoists go abroad with their cars for summer vacations, and so are little interested in foreign auto trips. But we would like to know of and see in some of our auto publications illustrated articles, descriptive of routes, grades, and road conditions in such places as, viz.: To and from the White Mountains by different routes; through the Catskills by different routes; through the Berkshires, by the several routes; Hudson river district; Connecticut Valley from Springfield to the Canadian line; and the forty other scenic routes. But up to date no publication or guide book gives the slightest clue, only thus saith the book: "From Smith's to Brown's, 4 1-2 miles, take left fork at Meeting house and follow telegraph poles," etc., etc., but nothing of road conditions or grades. I followed one guide book descriptive of route, and while no mention of a hill was made, I found one one-half mile long with a grade from 12 to 18 per cent.

Now, what the practical autoist wants are illustrated articles telling him how and where to go. If to the Berkshires, how to start out; there are four ways, and all somewhat bad, one or two very bad, the worst, perhaps, over "Jacob's Ladder," where a farmer does or did do a thriving summer business pulling stalled cars up the hill. And yet, never to my knowledge, has any publication described it in any way or done anything to enlighten the autoist of the difficulty in negotiating it. The same is true of Crawford Notch, one entrance to the White Mountains, or Profile Hill, one outlet. There are lots of snares and pitfalls in the route of the autoist not warned against—hence articles like that just published by you are so welcome. Let's have more of the same.

Meriden, Conn. GEORGE A. FAY.

WHY SWINEHART TIRE PRICES ARE REDUCED.

Editor THE AUTOMOBILE:

[988.]—It may be of interest to your readers to know that crude rubber to-day is selling at 35 cents per pound less than one year ago to-day. This is the lowest price which rubber has been sold at since November and December, 1903. The reduction in the price of crude rubber (we speak only of the best grades of Upriver fine Para) will undoubtedly cause a reduction of price of automobile tires and all other rubber goods in which large quantities of fine Para are used in their manufacture.

Owing to this reduction, the Swinehart Clincher Tire & Rubber Company has already announced a reduction in the price of its tires, to take immediate effect.

THE SWINEHART CLINCHER TIRE & RUBBER CO.,

Akron, Ohio. B. C. Swinehart, Vice-President.

WIDE-TREAD CARS FOR SOUTHERN ROADS.

Editor THE AUTOMOBILE:

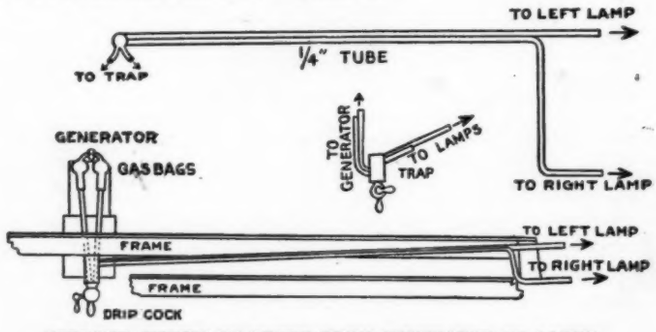
[989.]—Answering the inquiry of T. A. Ansley, regarding runabouts for Florida roads we would say that the Premier Company has built cars with wide tread for Southern roads for the past three years. If the gentleman inquiring will call on, or address, the Owen Typewriter Company, Tampa, Fla., he will be able to get more information regarding a car such as he desires.

Indianapolis, Ind. PREMIER MOTOR MFG. CO.

LAMP TROUBLES DUE TO DEFECTIVE PIPING.

Editor THE AUTOMOBILE:

[990.]—It is our practice to fully investigate thoroughly every complaint that comes to us, and in the past several years fully half of the gas lamp troubles are traced to defective piping. We are giving you herewith, for the benefit of your readers, a diagram of a correct system of piping, and it would pay all users of gas lamps to install the connections in this manner.



CORRECT SYSTEM OF PIPING FROM GENERATOR TO LAMPS.

Note that all pipes pitch down to drip cock. Pipes to each lamp should be independent, coming together at trap. Gas from generator, or tank, should enter trap below piping to lamps. Open drip cock at least once a week. Any repair shop can make and install the above, care being taken to fasten pipes securely so that there will be no chafing.

GRAY & DAVIS.

Amesbury, Mass.

THE BALTIMORE SHOW WAS MOST SUCCESSFUL

BALTIMORE, Md., Nov. 25.—Despite the gloomy weather and the financial stringency, the third annual automobile show, which closed last Saturday night in this city, was the most successful of the three. The class of people who attended were just the class the trade was desirous of coming in contact with, and many sales were reported by the local dealers. Several New York and Philadelphia capitalists were so encouraged with what they saw at the local show that they intend to do business in this town during the coming year. Many new agencies have also been secured. R. F. Kaehler and A. M. Eastwick, of Philadelphia, have formed a partnership to handle the Ford car in this city. The firm will be called the Ford Automobile Company, and has a capital of $25,000. Mr. Kaehler believes that with a little hustling over $200,000 worth of business can be done.

The Mar-Del Company has taken the local agency for the Buick. The Lambert Automobile Company has taken the agency for the Maxwell cars, and the Rice Auto Company has secured the representation for the Crawford line.

Among the out-of-town visitors were William H. Kirkpatrick, sales manager of the Peerless Motor Car Company; William T. Saylor, district sales manager for the Olds Motor Works; H. M. Cole, sales manager of the Autocar Company, of Philadelphia, and J. E. Duff and J. A. Lutz, of Washington, who arrived in the Oldsmobile roadster that made the 1,100 non-stop run in Washington, and which has traveled over 14,000 miles.

Owing to the fact that the door leading to the tea room of the Hotel Belvedere was too small to admit the Matheson chassis, the exhibit was taken to the show building and was the center of attraction. It was called the model for 1912. The Matheson Company has established an agency for their car at 1002 Morton street, and has secured the services of J. J. Mason.

The success of the show was something of an argument for the holding of shows early in the winter, and against those who contend for a later date. It has been decided to regulate the shows in this city by the dates selected for New York, Philadelphia and Chicago.

ECONOMY OF GASOLINE COMMERCIAL VEHICLES.

Demonstrations of commercial vehicles are far different things from the trials of the same name that pass current when the sale of a pleasure car is in question. The business man wants to be shown in no uncertain manner, and a good instance of how this is done is to be found in a recent four-day test made for Gimbel Brothers, a Milwaukee department store, by the Commercial Auto Company, representing the makers of the Logan trucks—the Logan Construction Company, Chillicothe, O., in Wisconsin. The tabulated results of the tests are given below and the table speaks for itself better than any description of the trials possibly could. As will be noted from this, nearly 1,000 packages were delivered in less than twenty-one hours' actual running time, with a consumption of 20 gallons of gasoline and 7 1-2 pints of lubricating oil. The car displaced three to four wagons with their corresponding drivers and helpers. The table follows:

Date	Routes	Wagons Displaced	Stops	Time	Gasoline	Oil
10/23 A.M.	East, Erie to North.....	3	100	1 hr., 20 m.	3 gal.	1½ pt.
" P.M.	East, Brady to City Limit	2	110	1 hr., 40 m.		
10/24 A.M.	South Side, inc. Bay View.	3	80	2 hr., 30 m.	3½ gal.	2 pt.
P.M.	" " " "	3	75	1 hr., 15 m.		
10/25 A.M.	West Side to City Limit..	4	160	2 hr., 30 m	4½ gal.	2 pt.
P.M.	" " " "	4	186	2 hr., 15 m.		
10/26 A.M.	North Side to City Limit.	4	150	4 hr., 45 m.	9 gal.	2 pt.
P.M.	" " " "	4	120	4 hr., 30 m.		
		27	981	20 hr., 45 m.	20 gal.	7½ pt.

NOW THREATEN TACKS AND GLASS.

Rockville, Md., Nov. 25.—Angered at the decision of Judge Henderson in the now celebrated Conduit road case, the farmers of the Potomac and Bethesda districts have made threats against the successful automobilists to the effect that they will resort to scattering tacks and broken glass and stretch wires across the Conduit road, if it should become necessary, in order to prevent automobiles from running at dangerous speed thereon.

Marshall Collins, of Glen Echo, who had such a fine time in collecting money from the automobile owners, stated that since the case had been pending the autoists have been speeding at pleasure through Glen Echo, and that he has been recording their numbers. Now he threatens that, should an appeal be taken, and they win their case, he will haul the past offenders before his court and compel them to pay heavy fines.

ONCE MORE THE STATUS OF THE AUTO.

Boston, Nov. 25.—The town of Ayer in this State has appealed to the full bench of the Supreme Court for a decision which involves the question whether automobiles have the same rights on the highways as horse-drawn vehicles. The question came before the court on an appeal from a decision against the town in a suit brought by William C. Doherty, an automobile owner who was awarded a verdict in the lower court for injuries to his automobile, which sank ten inches into the sand on one of the town's roads and became stuck. Work was being done on the road at the time and the accident happened at night.

The town claims that it is not liable to a traveler in an automobile, as the highway statute, which provides for liability, only makes it necessary that a town keep its roads in a safe condition for travelers with horses, teams and carriages. The town further contends that the Legislature did not intend that municipalities should keep their roads up to the smooth condition required by automobiles. Doherty claims that an automobile traveler comes within the statute, and that the town is liable at any rate because of the defective condition of the highway.

EXPERIMENTING WITH ROAD BUILDING MATERIALS

YORK, Pa., Nov. 25.—With a view to securing the very best limestone for the State highways—which means so much of an improvement for the autoists—the State authorities are conducting a series of tests of the York county limestones and other rocks and it has been found that they are almost perfect for the construction of good roads.

As far as the investigations have extended, limestones, as a rule, are too soft, and most of the twenty-eight varieties have too small binding or cementing value to be used alone. The addition of harder stone in equal proportions to the limestone, some of this stone of local origin, has led to very gratifying results. A number of experiments are now under way to prevent any mud or dust on improved State roads, and several of the recently completed sections have been treated with surface applications and with marvelous success.

The Postdam sandstone of the ridge north of Hellam was found to have even less binding or cementing value, though two-thirds harder than material required for durable highways.

THE AUTOMOBILE

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Flatiron Building, Madison Square
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H. M. SWETLAND, President

EDITORIAL DEPARTMENT

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
LOUIS R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - - - - - - - Autoland, New York
Long Distance Telephone - - - - - - - 300 Gramercy, New York

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National Character of the Chicago Show. Ever since there have been two rival organizations in the field they have seen fit to bury their differences on at least one point, and that has been the matter of exhibiting under the same roof at Chicago, whence comes the claim of the latter city to house the only national show of the year held in this country. When first made three years ago this was looked upon merely as characteristic of the Windy City, and not as implying a great deal, but in the interim it has come to mean all that the word signifies, for in no other gathering of automobile and accessory makers of the year is there brought together such an imposing aggregation of manufacturers, nor one so truly representative of the American industry as a whole. The imported car was always a weakly exotic that found it hard to flourish so far from the Atlantic, and never cut much of a figure at the Chicago show; now it is practically a minus quantity, and in this respect Chicago's gathering has always had more of an American flavor than any of the Eastern functions.

In presenting the largest collection of automobiles and automobile accessories ever brought together at one time, to the public, Chicago does so imbued with that spirit of enthusiasm which is characteristic of the manner in which she undertakes anything, and which shows that a thousand miles, more or less, is almost sufficient to insulate her from the influence of Wall street. There is no cloud of depression overhanging the Coliseum and its numerous annexes such as cast a pall over the initial Eastern event, and makers and dealers are arriving by the hundred, eager to do the business that they know awaits them, and confident that the outcome of next season will more than justify their plans. Chicago's show, as a whole, is the greatest achievement of the kind ever carried out in the shape of a purely industrial exhibition, and there is no doubt that the largest business ever done at an automobile show will be transacted during its week of strenuous activity.

Realizing that the two New York shows will be rolled into one at Chicago, many have waited for the Western exhibition rather than journey to the metropolis and spend double time. Here's to the hustling city on Michigan's shores!

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Improving the Automobile Steering Gear. Just as a chain cannot be any stronger than its weakest link, so the strength and reliability in action of the highest development in automobile design and construction has, as a limiting factor, some one part of the car, the failure of which means disaster to its occupants. It is generally conceded that this part is the steering gear, and, judging from the overlong list of fatalities attributed to it, the type of construction favored by current practice would appear to be lamentably deficient in more than one respect. Doubtless the chief of these is the fact that the weight of the car is, perforce, borne on an accessory construction, so to speak, rather than directly on the axle, as has been the custom with horse-drawn vehicles from time immemorial. In other words, the inherent weakness of the present-day automobile steering gear would appear to be centered in the use of steering knuckles. Theoretically speaking, this may be true, and the fact that two inventors have evolved devices in which the load is borne directly by the axle, demonstrates the fact that the steering knuckle is not an unavoidable evil.

However, the frequency with which other and equally essential parts of the steering gear are found to be at fault, while these reputedly weak members remain intact, amply indicates that improvement is not a matter of reforming practice in one respect alone. Starting at either end, whether at the steering knuckle or the steering mechanism itself, there appears to be no doubt that considerable refinement in detail must be brought about before the high speeds of which the automobile is capable can be characterized as safe. High speed in itself is naturally an element of danger, and many of the casualties hastily attributed to "a defective steering gear" have been due rather to the car's speed than to any failure of its parts. Nevertheless, that there is a great deal of room for improvement is strikingly illustrated by the many casualties in which the steering gear really proved to be at fault.

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The Need of a Strong National Organization. If the automobilists of this country desire to bring about uniform laws governing the use of motor-driven vehicles and the building of good roads over which to drive them, they must realize the absolute need and great influence in these directions which can be secured through the strengthening of the American Automobile Association by the formation of clubs wherever possible and the addition of these clubs to the various State bodies, either formed or now in process of formation. The club wields a powerful local influence, the State association holds sway in State matters, and the national organization, while continuing the pioneer work of establishing new State bodies, finds time to assist, within its powers and scope, the State associations already at work. No administration of the A. A. A. ever deserved so well the support of automobilists generally, including the manufacturers, as the present continued régime headed by William H. Hotchkiss. Only by local, State and national organizations can things be accomplished, and this is exactly the plan of A. A. A. work, and its efficacy is plainly illustrated by an increase of over 11,000 in membership in less than a year.

A. A. A. CHAIRMEN AND EXECUTIVE COMMITTEE.

President William H. Hotchkiss of the American Automobile Association has announced the appointments of the chairmen of the following boards for the fiscal year beginning December 1, 1907:

Legislative Board—Charles Thaddeus Terry, New York.
Good Roads Board—Robert P. Hooper, Philadelphia.
Touring Board—Frank B. Hower, Buffalo.
Racing Board—Jefferson DeMont Thompson, New York.
Technical Board—N. H. Van Sicklen, Chicago.
Publications Board—A. G. Batchelder, New York.

The selection of chairmen for the Legislative, Good Roads, Touring, and Racing boards are reappointments, while the Technical and Publications boards are new, having only recently been authorized by the Board of Directors.

The Technical Board will conduct during the next year several contests of a technical nature, and as soon as organized will frame rules and plans accordingly.

The duties of the Publications Board will rest chiefly in the preparation of the A. A. A. Year Book for 1908.

The chairmen of the boards are now selecting the committee members to be nominated to the president for appointment and approval by the Board of Directors.

President Hotchkiss has also announced the new Executive Committee of the association, which will have charge of the association's affairs for the fiscal year beginning December 1, 1907, subject to approval at the regular quarterly meetings of the entire Board of Directors. This committee comprises seventeen members, or ten more in number than its predecessor, this increase having been authorized at the recent annual meeting. The membership now consists of four officers, six chairmen of boards, and seven directors at large, as follows:

William H. Hotchkiss, Buffalo; Lewis R. Speare, Boston; George E. Farrington, East Orange, N. J.; Charles T. Terry, New York; Asa Paine, Minneapolis, Minn.; N. H. Van Sicklen, Chicago; Jefferson DeMont Thompson, New York; Frank B. Hower, Buffalo; Robert P. Hooper, Philadelphia; A. G. Batchelder, New York; Stanford L. Haynes. Springfield, Mass.; F. T. Sholes, Cleveland; Paul C. Wolff, Pittsburgh; Harry M. Rubey, Macon, Mo.; L. E. Myers, Chicago; James T. Drought, Milwaukee, Wis.; Frederick H. Elliott, New York.

The geographical distribution of the committee covers ten States, of which there are six in the Middle West. The first meeting will be held in the First Regiment Armory, Chicago, Friday, December 6, at which time the policies of the association for the ensuing year will be discussed.

The plan of government of the American Automobile Association provides for the election by the local club of its directors in the State body, with the State boards of directors naming representatives on the national board. The clubs are supreme locally, looking after affairs in their respective territories, the State associations attending to State matters, with additional help supplied by the national board.

About four-fifths of the membership of the national board is nominated directly by the State bodies, the others representing unfederated clubs in States wherein organization is yet to be effected. The plan has proven its feasibility during the past year, the A. A. A. having more than doubled its membership, with the number of State bodies more than trebled.

ENGLAND ABANDONS LIMITED FUEL RACES.

LONDON, Nov. 19.—Announcement is made by the Royal Automobile Club that no further Tourist Trophy races will be held on the Isle of Man on a limited fuel basis. Next year an endeavor will be made to conduct a speed event of about 350 miles, providing the permission of the authorities of the island can be obtained. The race will be based on maximum bore and minimum weight, rating not to exceed 64, with the formula D2n (D the diameter of cylinder in inches and n the number). Minimum weight will be 1,800 pounds, exclusive of driver, spare parts and tools. The event has been dubbed the "four-inch race," for that will be the bore obtainable under the rules.

SUDDEN DEATH OF GEORGE H. DAY.

George H. Day, who had recently resumed his active connection with the automobile industry by again becoming a member of the executive committee of the Association of Licensed Automobile Manufacturers, died suddenly of heart disease at Daytona, Fla., on Thursday, November 21.

Mr. Day was a prominent figure in the American automobile industry from its inception, as it was he who brought the A. L. A. M. into being, and it was his executive ability, as manager of the association, that developed its possibilities and influence to the present state of efficiency. He served in this capacity up to the winter of 1906, when he retired on account of ill-health, going to Florida to recuperate, but at the request of a number of his confrères in the association again became a member of the executive committee last summer.

GEORGE H. DAY.
Photo taken at Daytona, Fla., January, 1907.

Mr. Day was born in Brooklyn in 1848 and was a graduate of Hobart College. He was appointed vice-president and general manager of the Pope Bicycle Company by Colonel Albert A. Pope when the latter acquired the old Weed Sewing Machine Company, and later became president of the Electric Vehicle Company, from which he resigned to guide the destinies of the licensed association. Mr. Day was a director of the Ætna Life and the Phœnix Mutual Life Insurance companies, the American National Bank, the Fidelity Trust Company, and the Society for Savings. He was a trustee under the will of Mrs. Elizabeth Colt, and secretary and treasurer of the Colt Bequests Board of Trustees. He was a member of the Aldine, the Engineers', the Lawyers', the Alpha Delti Phi, and the New York Athletic clubs, and the Automobile Club of America. His wife, who was Miss Katherine Beach, daughter of J. Watson Beach, and four children survive him. The funeral services were held at his late home in Hartford.

EVENTS DURING THE CHICAGO SHOW.

Wednesday, December 4, 10 A.M., Meeting Executive Committee of N. A. A. M., First Regiment Armory.
Wednesday, December 4, 11 A.M., Meeting Committee of Management American Motor Car Manufacturers' Association, New Southern Hotel.
Thursday, December 5, 10:30 A.M., Meeting Mechanical Branch A. L. A. M., Chicago Athletic Club.
Thursday, December 5, 11 A.M., Meeting of Executive Committee American Automobile Association, First Regiment Armory.
Thursday, December 5, 2:30 P.M., Meeting Illinois State Automobile Association of A. A. A., Chicago Automobile Club.
Thursday, December 5, 8 P.M., Meeting Chauffeurs' International League of America, Auditorium Annex.

The Paris Prefecture of Police has recently enforced the law against smoking exhausts on automobiles with severity. Several drivers have been fined heavily and have in one or two instances been sentenced to prison for short terms. To use search lights within the city limits or to operate a siren, except in the open country, are two other offenses never overlooked by the bicycle "cops." This has, however, so long been recognized that only foreign visitors are now caught.

A NEW VOCABULARY FOR A NEW INDUSTRY

"BY what authority came the word chauffeur to be foisted on an English-speaking public?" The question is often asked privately and from time to time some indignant pure-speech-loving enthusiast echoes the same query through the columns of the daily press, with an appeal to the potentate of the blue pencil to use all his power and influence to exterminate the foreign intruder.

There are about a dozen other words, as foreign to the average man ten years ago as ancient Greek, which have gradually slipped into everyday use until to-day they pass unquestioned, and have, by their mere persistence, earned a place for themselves in the latest editions of national dictionaries.

It is one of the rules of life that a nation which has the honor of introducing anything new in any department of activity should impose its own nomenclature. There are sufficient examples in our own products adopted by speakers of other tongues and allowed to retain their native names to warrant accepting a few from outside. Because France got a few years' advance on the world in the introduction of the automobile she had to supply a new set of terms to cover the nakedness of her new creation. "Automobile" suggested itself, nothing being simpler than the combination of *auto* —self and *mobile*—moving. But before automobile was allowed to pass as a substantive it was used in connection with carriage, the new vehicle being a *voiture automoile*, or automobile carriage. As every noun in French must be of either masculine or feminine gender it had to be decided which class automobile should go into. As *voiture* is feminine some declared that automobile should be of the gentle sex, too; others took up the opposite side, and an academic division was produced. Even now it is not certain in the land of its creation, whether an automobile is a "she" or a "he."

"Chauffeur" is an interloper—an interloper who cannot give one solid reason why he should have been allowed to creep into the automobile language. Before self-moving road vehicles came into being chauffeurs were found only on railroad engines, steamships and stationary steam engines, their duties being to feed their charges with coal. Why the driver of an automobile should have been called a chauffeur it is difficult to understand, for his prototype on steam engines had nothing whatever to do with driving, that task being left to the *mécanicien*, and even the first automobiles, crude as they were, had little in common with a stokehole.

The further one goes back the less glorious is the ancestry of the chauffeur. In the dark days of the French revolution armed bands took advantage of the weakened executive power to roam through the land and rob all and sundry. A favorite method of persuasion when the terrified natives refused to reveal the spot in which their treasure was hidden, was to *chauffe* or burn the feet of the unfortunates. Frequently, in those cold winter nights the *chaufferette* or bed warmer, was seized upon as the convenient instrument of torture. So extensive were the depredations of these bands that for a time chauffeur and brigand were synonymous terms.

A garage is merely a shelter, with nothing in its make-up to indicate that it has any connection with automobiles. The connection is easy to see between *garage* and *gare*, a railroad station. A garage line on the railroad is merely a siding; when it was necessary to christen the home of the automobile, it was more natural that the locomotive should be godfather and not the horse stable.

As at present applied, chassis is just a little younger than the automobile industry. In earlier days it designated any kind of wood or metal frame, from a wooden cucumber frame to the metal framework of a railroad coach. It is only by common consent that chassis has obtained its present-day significance; originally it meant the side members and cross sections, nothing more in fact than the framework on which the mechanical organs are attached. Little by little its field of influence was enlarged, until now it is generally understood to mean the entire mechanical part of the automobile. Whether used in the singular or the plural, its termination is the same, *chasses*, which occasionally finds its way into print, being altogether incorrect.

Georges Huillier, one of the directors of the Mors factory in Paris, is responsible for elevating the tonneau from a humble field of usefulness as a wooden cylindrical chamber for containing wine or beer, into a dignified position as part of the automobile. At a time when automobile carriage work was without form and void, Huillier produced a new design of body with rear entrance and rounded ends, to be fitted on the chassis in the rear of the driver's seat. Roughly it resembled a barrel cut across the middle; as no more suitable term could be discovered, it was called a barrel—for tonneau is merely the French for barrel—and has remained a tonneau, in the English language, despite radical changes in its design. In French modern side entrance touring cars have ceased to be known as tonneaux, the type developed from the rear-entrance barrel-shaped body being a double phaeton.

Down in the old-world Department of Correze, in France, known under the old régime as Bas-Limousin, the peasants wear a heavy full footed wooden sabot, known locally as a limousine. The district has also a particular type of closed carriage a sort of small stage coach, the design of which, in this unchanging country, has probably not been modified in ages. A coachbuilder from Limoges established himself in Paris, produced a new type of open vehicle and named it limousine in honor of his homeland. From an open vehicle the name began to mean a completely closed carriage and with the automobile its importance has grown until now it designates the most luxurious type of touring body; the peasant's wooden shoe, however, has not renounced its right to the title.

Bavaria appears to have given birth to the landaulet, with a type of vehicle fitted with a folding top, and known as a Landau, after the town of Landau, in which it originated. It was modified, slightly reduced in size, and a few more letters added to its title. Taximeter had to be created to meet a modern need for a handy term to designate a vehicle that will doubtless play an important part in every-day life. Some advertising agents appear to have assumed that a taximeter is a special type of automobile, forgetting that the box of clockwork in itself no more modifies the vehicle on which it is placed than the gas meter changes the nature of the gas. It is merely a combination of *taxi*, a tax and *metre*, a measure of distance, designating the instrument which taxes according to distance. On its introduction it occasioned a little trouble, some users being in favor of *taxametre* and others claiming *taximetre;* after some discussion etymologists declared the latter form the only correct one, and it has remained.

Jerome Cardan has long laid in his unknown resting place, and his mathematical researches have so passed into the sea of knowledge as to be almost forgotten as individual efforts. The universal joint which his fertile brain created, and which was first known as Cardan's joint or joint à la Cardan, was never in danger of dying out, but its application was somewhat limited and its admirers were few until the automobile came along and brought it into public favor, four centuries after the death of its inventor.

ARRANGEMENTS FOR THE CLEVELAND SHOW.

CLEVELAND, NOV. 25.—Although the date of the Cleveland show has been definitely set for the week of February 17, the Cleveland Automobile Dealers' Association held a meeting recently in order to decide upon some of the preliminary arrangements. George Collister, who has had charge of most of the Cleveland shows held in the past, will also have the management.

INCREASED ACTIVITIES OF LEADING A. A. A. CLUBS

PHILADELPHIA'S FORCEFUL A. A. A. CLUB.

PHILADELPHIA, Nov. 25.—Having just reached the goal set less than a year ago—the 500 membership mark—the Automobile Club of Philadelphia has decided to go ahead and endeavor to double this figure. Conservative to a degree, the Automobile Club of Philadelphia officials, while little heard of in the promotion of track and road events, is yet a powerful factor in the defense of autoists' road rights hereabouts and in the State at large, in route-making and the other details which add to the comfort of the tourist.

In this latter respect the club has done a grand work. Quietly and without the "press work" which has been such a marked help to the lesser local clubs, the Automobile Club of Philadelphia has gone quietly about its work of sign-boarding the main routes leading from Philadelphia to the neighboring large cities and resorts. At its own expense the Philadelphia-Trenton and Philadelphia-Reading routes have been thus marked, every point where a possibility of the tourist taking a wrong road exists having been decorated with a large signboard setting forth the distances to the nearest large towns and the directions. The roads to Gettysburg and Harrisburg, to the Delaware Water Gap, and to Baltimore are being carefully gone over by the club's agents, with a view of not only discovering the best and most direct routes, but of avoiding as far as possible the ubiquitous toll-gate, which makes touring to and from the Quaker City one continuous process of "digging down into one's jeans." As a result the club's committee having charge of this work has definitely abandoned the much-traveled route to the north via Easton and decided on that via Bethlehem as not only shorter but equally good and much less expensive. On this route, therefore, the club will set its markers.

The direct route to Baltimore via Wilmington being at present almost impracticable for comfortable touring, and that via Hanover and York much too long, the club's agents are at work on a compromise route which will be announced, when a short connecting link, now in poor condition, is put in proper shape.

The club's law committee, under the chairmanship of S. Boyer Davis, is also doing excellent work, having just issued a compact digest of the automobile laws of Pennsylvania and all adjacent States for the benefit of tourists. Besides this, the committee has done effective work in protecting the interests of those of its members whose rights have been endangered through the overzealousness of borough, township and county officials.

It is along these lines that the club's officers believe that the club's energies may be most effectively directed, and the result in the increase of membership gives evidence of the wisdom of their course. Without endeavoring to detract in any manner from the policies of other local automobile organizations, it cannot be denied that in the long run the benefits to automobilists generally—not excluding the trade—resulting from the efforts of the Quaker City's oldest automobile club, are becoming more and more apparent to the great army of "unattached" automobilists hereabouts. Therefore it can hardly be said that the 1,000 membership mark which the Automobile Club of Philadelphia officials have set as a goal, and which they expect to reach by the close of the year 1909, is not too ambitious.

Long before that time, in all likelihood, the club will have built its own home. Indeed, the demand for a central headquarters such as the big New York organization now boasts is becoming insistent and the first steps toward that much-to-be-desired consummation have already been taken. Several of the club's more prominent members have for the past year been quietly looking over the ground, and it is quite possible that an official announcement along these lines will be made public early in the coming year.

COMPEL TOWNS TO PROVIDE SIGNBOARDS.

ALBANY, N. Y., Nov. 25.—President Oliver A. Quayle, of the New York State Automobile Association, has been on a legal hunt in the archives of New York's forgotten legislation, and as a result of the successful outcome of his quiet investigation he is now sending out notices to New York State clubs which will come as considerable of a surprise to the majority of their members—even those who follow the law. The act he ferreted out was evidently passed at the instance of cycling interests, and constitutes Chapter 330 of the Laws of 1895, being an amendment to the highawy law relating to the erection of guide boards and posts upon highway intersections. It makes the erection of such signs a part of the duty of highway commissioners generally, and, what is far more important, provides that, upon the written application of any five resident taxpayers of any town, or twenty resident taxpayers of any county, the highway commissioners shall have such signs erected as are requested in the petition, their further cost and maintenance being a town charge. Neglect or refusal to comply with such requests is punishable by a fine of $25. That probably not one person in a thousand was aware of the existence of such a law is evident from the fact that so many clubs have been doing this work at their own expense. The law is as follows:

AN ACT to amend the highway law relating to the erection of guideboards and posts upon highway intersections.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Sec. 1. Section five of the highway law is hereby amended to read as follows:

Sec. 5. Milestones and guideboards. Commissioners of highways may cause mileboards or stones to be erected upon the highways in their town as they think proper; they shall also cause guideposts, with proper inscriptions and devices, to be erected at the intersections of such highways therein, as they may deem necessary, which shall be kept in repair at the expense of the town, by the overseers o fthe highways of the districts in which they are respectively located. Upon the written application of five resident taxpayers of any town, or twenty resident taxpayers of any county in which the town is located, to the commissioner of highways, requesting the erection of one or more guideboards at the intersection of highways in such town, the commissioner of highways shall cause to be erected at the intersections mentioned in such application, such guideboards, indicating the direction, distances and names of towns, villages or cities to or through which such intersecting highways run. Such application shall designate the highway intersections at which such guideboards are requested to be erected and may contain suggestions as to the inscriptions and devices to be placed upon such boards. The cost of the erection and maintenance of such boards shall be a town charge. If the commissioner of highways refuses or neglects, for a period of sixty days after receiving written application, to comply with the request contained in such application, he shall for such neglect or refusal forfeit to the town the sum of twenty-five dollars, to be received by the supervisor in the name of the town, and the amount so recovered shall be set apart for the erection of such guideboards.

WORCESTER CLUB'S ANNUAL BANQUET.

WORCESTER, MASS., Nov. 25.—The Worcester Automobile Club had its fifth annual banquet last Thursday night, and the members who have been at most of the annual affairs of the club say it was the best in the history of the club.

"Modes of Travel and Transportation" was the theme on which the after-dinner speaking was based. Frank Roe Batchelder was toastmaster. No speaker was obtained for the aerial topic, but a letter from Dr. Julian P. Thomas of the Aero Club of America was read, and this was a good substitute for an address. Secretary Frederick H. Elliott of the American Automobile Association spoke for the autoists. He devoted his address to the A. A. A., what it has been doing and what it intends to do in the future. He gave the members of the club and their

friends the clearest idea of the work of the A. A. A. they have received in a long time.

Speakers on other lines were: Steam railroads, Charles A. Waite, general agent for the Boston & Maine Railroad; electric railways, Edward G. Connette, general manager of the Worcester Consolidated Street Railway Company and of the New Haven trolleys in this section of the country; John F. Kyes spoke for the bicycle and told stories of the precursor of the automobile; Attorney Webster Thayer spoke for the horse and his drivers; and Representative Robert M. Washburn spoke for the people who walk.

A feature of the banquet was a string of parodies on popular songs, with grinds on the officers and members of the club. Dr. A. J. Harpin led in the singing and the company was strong on the chorus of each.

President W. H. Chase of the Wachusett Automobile Club of Leominster, Attorney Francis Hurtubis, Jr., of Boston, counsel for the Massachusetts State Automobile Association; Mayor John T. Duggan, who responded for the city of Worcester, and Chief David A. Matthews of the Worcester Police Department were guests of honor at the banquet.

BAY STATERS TO DISCUSS PERTINENT SUBJECT.

Boston, Nov. 25.—The Bay State Automobile Association will open its winter social season next Saturday evening with the first of a series of smoke-talks, open to members and their friends. As there is no apartment in the clubhouse on Dartmouth street capable of holding a large assemblage, the meeting will be held in the Hotel Oxford nearby. The subject selected for discussion at the opening gathering is "The Co-operation of automobile clubs in the enforcement of the automobile law." This is a subject of great interest to all automobilists, and the association has secured as leaders in the discussion Chairman W. E. McClintock of the Massachusetts Highway Commission, which administers the automobile law in this State; Lewis R. Speare, vice-president of the American Automobile Association and chairman of the legislative committee of the Massachusetts State A. A., and Mr. Crowley, a young Boston attorney who has made a special study of the automobile law.

The association is also making preparations for its annual banquet, which will be held on the evening of December 10 at the Hotel Somerset. The committee in charge of the arrangements is assured of a good attendance and is planning to invite some prominent men in the automobile world to make the after-dinner speeches.

MASSACHUSETTS BODY CHANGES FISCAL YEAR.

Boston, Nov. 23.—At a meeting of the board of directors of the Massachusetts State Automobile Association, held in this city last Thursday, it was decided to change the date of the annual meeting from April to October, thus giving new officers all winter to prepare for their duties, instead of entering upon them at the beginning of the outdoor season. The directors also voted to adopt a new set of by-laws for the association. A general meeting of representatives of the various clubs which are members of the State association will be held next month, for the purpose of discussing the attitude which the association shall take in the subject of legislative matters at the next session of the General Court. Several important laws affecting automobilists will be proposed, and the association is thus early getting ready to look out for the rights of its members and all other automobilists.

ANNUAL DINNER OF LONG ISLANDERS, DEC. 6.

Brooklyn, N. Y., Nov. 25.—The annual meeting of the Long Island Automobile Club will be held Wednesday, December 4, at 8:30 P.M., at which time annual reports will be read and officers elected for the ensuing year. The seventh annual banquet will be held Friday evening, December 6.

The Runs and Tours Committee announce that the touring season will close November 30. Odometers which were registered at the clubhouse at the beginning of the touring season, in connection with the mileage trophy, must be registered with the club's manager, Mr. Creighton, on or before that date. The committee suggests that members who have good mileage scores shall not overlook this requisite. The mileage trophy, offered by James Edward Bristol, will be presented at the annual dinner to the member whose odometer shows the highest registration. The touring trophy, offered by Willard P. Reid, will be presented on the same occasion to the member who has toured in the greatest number of States and provinces during this season.

SECRETARY BONNELL OUT OF DANGER.

Newark, N. J., Nov. 25.—H. A. Bonnell, the hard-working secretary of the New Jersey Automobile and Motor Club, who was recently operated upon at St. Luke's Hospital for appendicitis, is out of danger, and it is expected that he will be able to go to his home in East Orange in another week. It will be remembered that Mr. Bonnell was taken ill during the recent 24-hour endurance run of his club, but he insisted upon remaining on duty until the completion of the event.

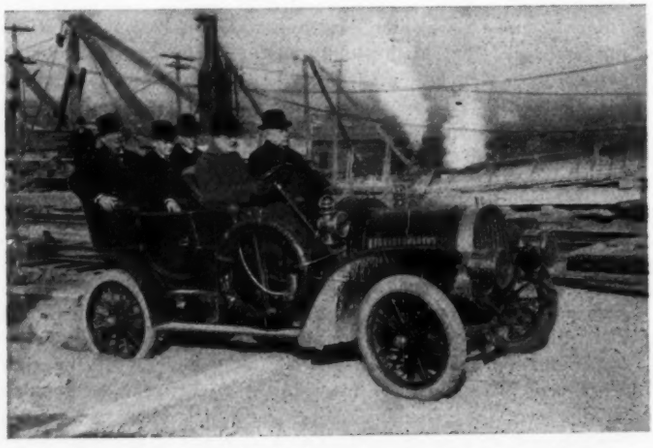
The club committee this week will decide on a design for the silver cups which will go to the eight winners, the Oldsmobile entered by R. A. Greene having been added to the list of clean-score cars. It was found that the observer noted the slipping of a clutch and charged the driver with the time he spent in putting chalk on the clutch to avert a repetition of the slipping. The motor of the car was not stopped.

A. C. OF BUFFALO ANNUAL MEETING.

Buffalo, N. Y., Nov. 25.—The board of directors of the Automobile Club of Buffalo has amended the by-laws so that hereafter the board will consist of five members, instead of three members, and the officers, as has been the custom ever since the organization of the club. This action was deemed advisable on account of the big increase in the membership during the last two years. The annual meeting of the club will be held in the clubrooms the evening of December 16. Nominations will be announced December 1. The second entertainment to be given this winter will take place on the night of election.

FIRST TO NAVIGATE NEW HARTFORD BRIDGE.

Hartford, Conn., Nov. 25.—With Ralph Barkman, city sales manager of the Pope Motor Car Company, at the wheel, a new 1908 Model M Pope-Hartford car earned the distinction of being the first to essay crossing the new but yet incomplete bridge across the Connecticut river to East Hartford to-day, the photo showing the car and its occupants on the trip.



POPE-HARTFORD CROSSING NEW BRIDGE AT HARTFORD.

VICE-PRESIDENT FAIRBANKS, GOVERNOR GILLETT AND SENATOR FLINT OF CALIFORNIA, AT STANFORD UNIVERSITY, PALO ALTO, CAL.

THE CHAUFFEUR'S MORAL CODE.

Realizing the fact that dissatisfaction over the service rendered by a commercial vehicle is due far more often to the driver than to any other cause, the Firestone Tire and Rubber Company, Akron, O., have prepared a code for the conscientious driver to follow. It is made in the shape of a large and very ornate certificate embellished with the usual seal and ribbon and is intended to be hung on the wall. Its preamble is as follows:

This certifies, that the Commercial Motor Vehicle Chauffeur possessing this document, has the interests of his vehicle at heart, and, unmindful of the yearnings of the Repairman and Junk Dealer, hereby adopts the following:

(1) I will not overload or overspeed my vehicle because this will be harmful to the mechanism and tires. I realize that a good rubber tire has a certain amount of "life," and if persistently overworked it cannot recover.

(2) I will always keep the brakes working evenly and the axles and wheels "trued up." I can thereby save rack and wear on my vehicle and prevent unnecessary strain on any one of its tires.

(3) I will not allow oil or grease to accumulate on my rubber tires, as this will eventually cause decay.

(4) I will never expose my tires to burning heat, as the wear-resisting properties of the rubber would thus be destroyed.

(5) I will always remember to start my vehicle in a straight line before turning the steering wheel; because by turning front wheels when vehicle is standing still a heavy and unnecessary strain would be placed upon the tires.

(6) I will start and stop my vehicle gradually and avoid jerky motions under all circumstances.

(7) I will not persist in running my vehicle along street car rails, as that would grind down the edges of the tires.

(8) I will always, when possible, choose a smooth pathway, avoiding obstacles and road irregularities; and will cross car tracks preferably at an angle.

(9) As merely resetting or repairing a tire will, in many cases, double its life, I will have my tires attended to promptly when damaged, in order to secure the greatest amount of service from them.

(10) And above all things, I will use my influence to have my vehicle equipped with the best tires that are made—Firestone Side-Wire motor tires.

THE GERMAN EMPEROR'S NEW CARS.

Three new Mercedes cars have been recently supplied to the German Emperor, two for his own personal use and one for the Empress. Her Majesty's car is a 45-horsepower landaulet, while the Emperor has kept pace with the times by purchasing a very handsome six-cylinder of 75-horsepower, a huge touring car, able to fulfill his love for speed. The other vehicle is a 60-horsepower four-cylinder phaeton. The garage staff consists of three head drivers, seven ordinary chauffeurs, and ten servants, who accompany the drivers. All of these wear buff uniforms and the chief chauffeurs carry an armshield. The whole is under the management of Lieutenant Zeyss, with Baron von Reischach, chief of the Imperial stables, at its head and Werner as chief chauffeur.

DENVER FRANKLINITES MADE MERRY.

DENVER, Nov. 25.—"Bilz" is not simplified spelling for those unwelcome visitors that Uncle Sam delivers around the first of the month—it's part of the cognomen of Charles Bilz, who is the Denver distributor of the Franklin cars, and whose garage is at 1432-38 Court place. A few nights ago he entertained Denver Franklin owners—gave them a right royal time, and he paid the Bilz. This took the form of a dinner and vaudeville show at the Albany and proved a most enjoyable affair. The menu card was novel and characteristic, the fun fast and furious, and according to all present everything was "all right." Denver owners are certain that Bilz is as good as the car he handles.

HOW IS THIS FOR FAST TRAVELING?

Autoist to Saint Peter: One and two-tenth seconds from the earth! Isn't that a record.—*Blätter für Sport-Humor.*

AN IMPROVED FORM OF STEERING GEAR.

Quite a radical departure from current practice in steering-gear construction is represented by the Murray steering mechanism, here illustrated, and in which the load is designed to be borne entirely by the wheel and axle, so that shocks are not transmitted to the steering-gear. The wheel is pivoted on a trunnion placed in the hub and the axle terminates exactly in the plane of the spokes, the steering connections being made in the usual manner. The axle itself may be of any type, provided with a forked end to carry the trunnions. The latter are fixed to a journal with two bearing surfaces, a large one in the plane of the spokes and a smaller one outside this plane. A spindle revolves axially inside this journal and is fixed in the hub of the wheel by a bolt. The wheel proper is made with a large recess to admit the larger diameter of the journal with its roller bearings, and a second recess for the other set of bearings. Forming part of the journal bearing is an arm engaging the reach rod of the steering system, by means of which the wheels are moved. Most of the weight of the car thus falls on the larger bearings, and these are reinforced by a second set in another plane.

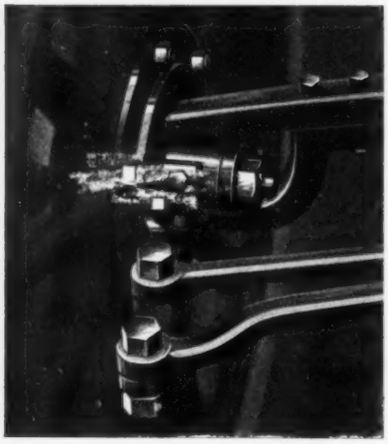


FIG. 1.—Illustrating the steering connections.

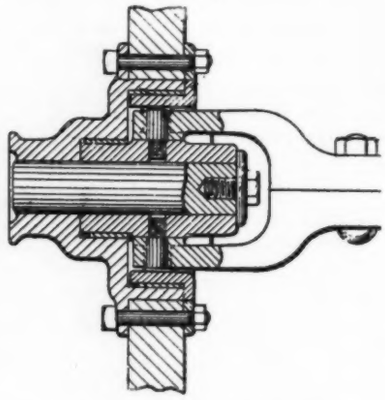


FIG. 2.—Details of wheel and axle assembly.

The axle is rigid to the end and the latter point is brought within the plane of the wheel, carrying the load as if it formed a direct bearing for the hub, from which it will be apparent that it has been the aim of the designer to evolve a steering mechanism which shall combine all the manifest advantages of a simple wheel and axle, at the same time producing a method of steering that shall be more positive as well as more reliable than present practice permits. James E. Murray of McKeesport, Pa., is the inventor, and patents have been granted in the United States, as well as several foreign countries.

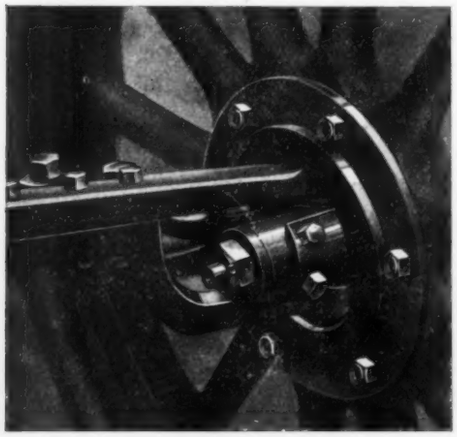
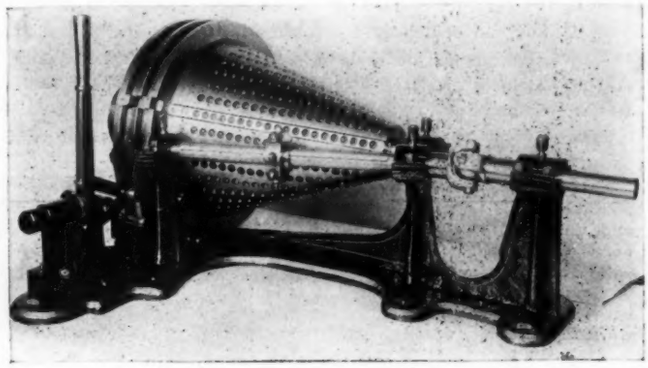


FIG. 3.—Method of mounting the wheel on the axle.

CHANGE-SPEED GEAR ON NOVEL PRINCIPLE.

The use of a cone has long been common in connection with belt-driven machinery for speed-changing, but the "R-W Speed Variator," which is illustrated by the accompanying photograph, is a novel departure from previous practice in this respect, in that it combines the principle of both the cone and gearing, thus insuring a positive drive. The method of effecting the speed changes is of considerable interest, having been very ingeniously worked out. The "gear-cone" is provided with a number of circumferential rows of "gear pits," while parallel with the slant of the cone is a shaft on which is feathered a spur pinion having pin teeth of a general conoidal form. This gear is movable longitudinally on its shaft, so as to bring it into mesh with any desired row of pits on the cone, thus causing the driven element, which may be either the gear or the cone, to rotate at a corresponding speed. The circular rows of pits are so arranged that one of each row is exactly in line with the correspondingly located pits in all the other rows. This straight or longitudinal series of pits is formed on a sliding bar capable of movement in either direction, a distance equal to the space between successive circular rows of pits. Consequently, if at the moment in the cone's rotation when the slide is parallel with the gear shaft the slide be shifted, it will carry the gear to the next row of pits. At the base of the cone are two grooves, which the slide crosses, while projecting from the slide into the grooves are two studs, the arrangement being such that when the slide is in its normal position these studs are spaced slightly from the rib between the grooves. Adjacent to the grooves are two oppositely inclined cams, each equal in width to the distance the slide must move to transfer the gear from one row of pits to the next, so that the cams engaging the stud on the slide will shift the slide the proper distance. These cams are mounted on the upper ends of two arms pivoted at their lower ends, the arms being connected by links to a controlling lever on opposite sides of the pivot of the latter, this method of connection making it impossible to throw both cams into the grooves at once. Normally, both cams are retracted in the inoperative position, and to produce the necessary rotation the moment the operator releases the controller a spring-controlled plunger is provided. This has a flat face bearing against the controller on both sides of the pivot, so that oscillating the controller in either direction compresses the spring, and this, upon releasing the lever, immediately throws the lever to the inoperative position with both cams retracted. To restore the slide to the normal position after each actuation, an inclined member is provided at each side of the flanges at the base of the cone, against one or the other of which one of the side lugs strikes after passing the gear. As long as one of the cams is held in its groove each revolution of the cam will produce a movement of the slide and a corresponding shifting of the gear, so that the latter moves, step by step, up or down the cone, according to which cam is in operation. To prevent damage from failure to retract the cam when the last step is reached, this is withdrawn automatically by mechanism placed in the cone itself.



NOVEL MECHANISM OF THE R-W SPEED VARIATOR

DEMONSTRATING A 14-H. P. WALTHAM.

Few better illustrations of what the modern light commercial vehicle of the gasoline-driven type can accomplish in the way of economy and reliability have ever been afforded prospective purchasers of such cars than the recent round trip of the 14-horsepower, water-cooled Waltham "Parcel Car," from the home factory to New York and return. On the run to the metropolis, the distance of 244 miles was made in 12 hours and 40 minutes on a fuel consumption of 15 gallons and one gallon of lubricating oil. Three passengers and a load aggregating 875 pounds were carried, in spite of which it was only necessary to drop to a lower speed on but four occasions throughout the trip, in order to mount particularly bad grades or overcome poor going.

The car was run to New York just prior to the opening of the Garden show and was run around the city throughout the week of the latter for demonstrating purposes. The car is friction-driven, and one of the favorite tests for showing its ability was to bring it to a standstill on the steepest part of the Fourth avenue hill, starting again on the high gear without first speeding the motor. Following the show, the car was taken to Newark, N. J., for the purpose of making demonstrations for the Newark agents, the H. J. Koehler Sporting Goods Company, one of its feats consisting of taking a hill that is said to be the favorite stamping ground of demonstrators in showing high-powered pleasure cars. The car was stopped and started again on the worst part of the hill.

On the return trip demonstrations were made at New Rochelle, N. Y., Waterbury and Hartford, Conn. On arriving at the factory the car was weighed and found to tip the scales at 1,600 pounds, and, with the load it had carried, 2,475 pounds. The car was dismantled and all its working parts examined. It was found that the 900-mile trip had not been sufficient to cause the slightest amount of wear on any of the parts, the high-speed bevel friction surfaces in particular not showing any perceptible evidences of the hard service. The car was immediately reassembled and a much more ambitious trip undertaken, as it was started on its way to Chicago, the plan being to use it for demonstration purposes during the show week there, November 30-December 7. Although the roads between New York and Chicago are in a most unfavorable condition at this time no doubt is felt as to the ability of the Waltham to accomplish the journey.

RECENT INCORPORATIONS IN NEW YORK.

Incorporation has recently been effected at Albany of the Recometer Company of America, with a capital of $300,000, for the production and marketing of speed indicating devices. Directors are Frank W. Waggoner and Frank E. Carstarphen, 253 Broadway, New York; Daniel M. Miers, Hasbrouck Heights, N. J. The Fleur de Lys Automobile Company of New York has been incorporated with a capital of $25,000, directors being F. Knowlton, 638 East 139th street; E. A. Monfort, 1350 St. Nicholas avenue, New York; E. D. Cronin, 277 Vanderbilt avenue, Brooklyn.

E. R. THOMAS ARRIVING AT HIS BUFFALO FACTORY IN A THOMAS TOWN-CAR.

THOMAS TO BUILD A THOUSAND TAXICABS.

BUFFALO, N. Y., Nov. 25.—Announcement is made that the E. R. Thomas Motor Company has an order to build 1,000 taxicabs. It is reported here that two of the largest New York hotels will replace their hansoms with these cabs. Much new machinery is to be installed by the Thomas company in order to meet the sudden demand for this class of conveyance.

The Thomas Motor Cab Company has been incorporated to operate taxicabs. The certificate was filed in the County Clerk's office last week. It is capitalized at $50,000. Directors are E. R. Thomas, E. L. Thomas, and Arthur Z. Mitchell, all of Buffalo.

E. R. THOMAS DETROIT CO. IN NEW PLANT.

DETROIT, MICH., Nov. 25.—The E. R. Thomas Detroit company is now operating in its new reinforced concrete factory out Jefferson avenue. The machinery has been turning for three weeks past and every department is now in full operation. Notwithstanding the delay incidental to moving from the old factory, production of the 1908 cars was carried on continuously, and deliveries have been going out to the agents ever since the first of October.

The rapidity of construction of this large plant is astonishing, as the contract was let May 15 and the plant was opened the latter part of September, fully equipped.

NEW REINFORCED CONCRETE FIREPROOF FACTORY OF THE E. R. THOMAS DETROIT COMPANY, ON JEFFERSON AVE., DETROIT.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

The Algonquin Motor Car Company, of Boston, succeeds the Henshaw Motor Car Company and will retain the same salesroom at 97 Massachusetts avenue, representing the Oldsmobile and Columbus Electric in New England.

One of Philadelphia's latest industries is that of tire-making, the product of the firm of Jas. L. Gibney & Brother attracting considerable attention at the recent show in the Quaker City. They are turning out side-wire types in singles and "twins" as well as the internally wired type in all sizes.

The Longacre Motor Company has succeeded the Manufacturers' Motor Car Company, at 54 West Forty-third street, New York City. H. Homey Hill is president of the new company, which has taken a lease of the adjoining buildings, at 44-52 Forty-third street, and will move as soon as alterations are completed.

The co-partnership heretofore existing between Harry M. Eastman and Ernest F. McCarthy, doing business under the firm name of H. M. Eastman & Company, Melrose, Mass., has been dissolved. Mr. Eastman will continue in the business, maintaining a garage and selling Cadillacs and Buicks.

The Northern Motor Car Company is also getting its selling force out on the road early, the following representatives already reporting a good business with excellent prospects. The territory is divided as follows: John W. Swan, Pacific Coast; L. E. Wood, Middle West; James H. Foster, Ohio and Indiana; A. G. Williams, East, including New England; J. L. Sternberg, West.

The progressiveness of the Continental Caoutchouc Company's manager, Joseph N. Gilbert, was in evidence at the recent Yale-Princeton football game, in the shape of a special Continental tire depot, temporarily established in Reichert's Palace garage, New Haven. Few events of any kind bring forth so many automobiles as came to the college city on that day, so that the foresightedness of the Continental manager in providing a stock of all sizes ready at hand to meet the emergency was apparent.

In chronicling the incorporation of the Regal Motor Car Company, Detroit, Mich., in THE AUTOMOBILE, November 14, the name was inadvertently put as "Royal" instead of "Regal," and while there is considerable similarity in the significance of the two words, the incorporators would naturally prefer to see the proper adjective employed. The company has been organized by Paul Arthur, trustee, and Robert Webster, with $100,000 capital, $51,000 of which has been paid in. Runabouts, touring cars, light delivery cars and town cars will be built.

The value of the automobile as a means of doing business is best realized by those connected with the industry, and while the ordinary salesman makes his rural rounds in an antiquated buggy with a "hay motor," or depends upon trolleys and accommodation trains, the up-to-date salesman gets over three times the territory in his car. This is the way in which E. M. McGookin, sales manager for the Stewart & Clark Manufacturing Company, gets over his territory in his Marion roadster, on which he has mounted an attractive polished metal sign bearing the words "Stewart Speedometer," so that all who run may read.

It sounds a bit paradoxical to say that insufficient inflation is sometimes the cause of tires "blowing out," but this comes from such an excellent authority as E. H. Broadwell, of the Fisk Rubber Company, who explains it this way: "When a tire is not pumped up sufficiently, the pressure of the ground on the under side has a tendency to loosen the several plies of fabric in the envelope of the tire, so that they rub together, or shuffle, as tire makers say. In this fabric, or friction cloth, is where quality and good work count tremendously for tire economy, and this is the reason Fisk tires are more expensively made and have one more ply of friction fabric than others of the same diameter. The rubbing together, or shuffling, of two plies causes the threads to break and so weakens the casing that the inner tube, with its high pressure, bursts through, or blows out. Old tires, therefore, more than new ones, should be properly inflated; not too hard, nor yet slack."

Figures recently compiled from the State automobile registration lists in Illinois and Wisconsin, show that the Rambler, made by Thomas B. Jeffery & Company, Kenosha, Wis., leads all other makes in numbers in those commonwealths. There are perhaps 13,000 cars registered in Illinois, but available lists show only 9,799, and of this number 738 are Ramblers. In Wisconsin the full registration, not including transfers, was, on August 1 of this year, 3,852. The Rambler leads in that State with 477. In Illinois complete figures have been difficult to get. Yet the total given covers the registration on practically all cars now in service. Next after the Rambler in Illinois in point of numbers comes the Cadillac with 658, while the Ford is third with 599. Illinois has 115 foreign cars and 369 electrics. Just 223 different makes are registered. Wisconsin official lists give the Rambler supremacy over all with a registration of 477. The others rank below the Rambler, as follows: Cadillac, 454; Oldsmobile, 232; Buick, 222; Ford, 221.

NEW AGENCIES ESTABLISHED.

The Commercial Auto Company, of Milwaukee, and of which O. A. Eskuche and Mitchell Mackie are the principals, has taken on the line of the Logan Construction Company, Chillicothe, O., for the State of Wisconsin for the season of 1908. The concern has secured temporary quarters at 1103 Grand avenue and already have a full line of the Logan cars on the road demonstrating.

That agencies for the "Silent Northern" are rapidly being closed up for the coming season is evident from the appended list of those who signed within the last week or two: Copeland & Taylor, Pontaic, Ill.; C. W. Evans, Dixon, Ill.; Noah Keeler, Wallace, N. Y.; A. H. Ritter, Iola, Kan.; Enid Automobile Company, Enid, Okla.; Wilson Automobile Co., Wichita, Kan.; Huron Automobile & Electric Company, Port Huron, Mich.

PERSONAL TRADE MENTION.

James R. Gilbert, formerly of the B. F. Goodrich Company, has entered the service of the Michelin Tire Company as assistant to C. C. Harbridge, manager of the Chicago branch.

Albert C. Galbraith has just entered the service of the Fisk Rubber Company and will travel from the latter concern's Philadelphia branch house, his territory consisting of Eastern Pennsylvania and Virginia.

Percy Owen, president of the New York Automobile Trade Association, has appointed Sidney B. Bowman a member of the committee on storage rates, the other members of this committee being W. H. Haradon, of the Victor Auto Storage Company, chairman, and G. A. Knowles, of the Locomobile Company.

J. Elmer Pratt has severed his connection with the sales department of the Cadillac Motor Car Company, where he has been for a long period as the general assistant of W. E. Metzger. Mr. Pratt, who has been a conscientious and hard worker, now intends to indulge himself in an innings of the open-air living, after which he will again get into harness.

T. F. Byrne, formerly manager of the Franklin Automobile Company, Chicago, has severed his connection with that concern to assume the management of the Eastern Automobile Company, Montreal. The latter company represent the Packard, Maxwell, Clément-Bayard and Napier cars and are also distributors of Diamond tires in that part of the Dominion.

PRES. OF THOMAS DETROIT CO.

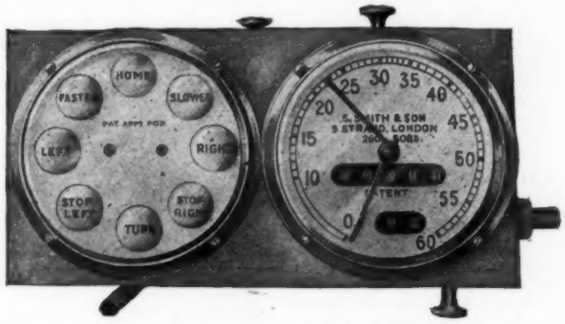
Hugh Chalmers, formerly vice-president and general manager of the National Cash Register Company, is one of the most notable newcomers to the ranks of the automobile industry. He has acquired a heavy interest in the E. R. Thomas Detroit Company and becomes president of that concern, though Mr. Thomas still remains a dominant figure in the organization. The product will also continue to be marketed by the Buffalo house, which has already contracted for the entire season's output of the Detroit factory. In taking active hold in his new connection on December 1, Mr. Chalmers will bring to bear his wide knowledge of manufacturing and selling methods which he was instrumental in developing while with the Dayton concern, which is generally conceded to have the best selling force in the world. The other officers of the Thomas Detroit Company are H. E. Coffin, who is at present in Europe attending the London and Paris shows, F. O. Bezner, J. J. Brady, and R. D. Chapin. The output is to be greatly increased over that of the past season.

HUGH CHALMERS

Newly Elected President of the E. R. Thomas Detroit Co.

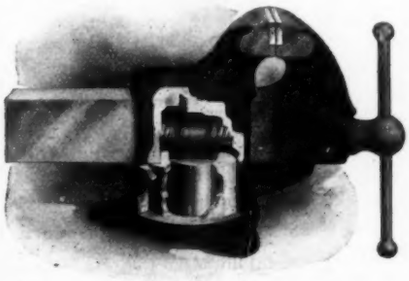
INFORMATION FOR AUTO USERS

Smith Speed Indicators.—For a number of years S. Smith & Son, Ltd., London, have devoted considerable attention to the development of speed and distance recording instruments, as well as electric communicators and auto clocks. The leader of their line is the Smith Speed Indicator, which has been for the past several years the leading article of its kind in Europe, as is evidenced by the fact that practically every crowned head on the Continent, as well as the king of England, are users of these instruments. In design the Smith Speed Indicator differs radically from the usual American device. It operates on the principle of centrifugal force, a horizontal governor being rotated against a spring, three springs in all being employed—a weak one for low speeds and two heavier ones which come into action successively as the speed increases, thus making the instrument very accurate, as well as avoiding the necessity of cramping the dial at one side. The marking of the dials is done by hand, according to the indication of the pointer at known speeds, and the dial of each instrument differs slightly to compensate for the variation of the springs. The length of the dial circle is 8 1-2 inches, as compared with the usual semicircular marking, so that the reading is very clear.



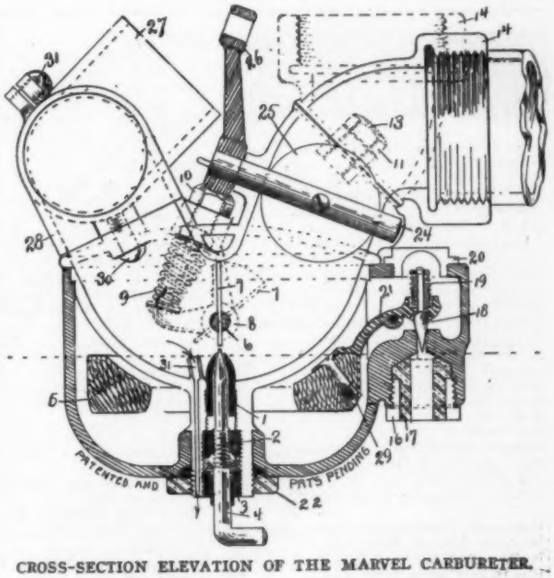
SMITH SPEED INDICATOR AND ITS CONVENIENT DIALS.

Rock Island Vises.—The art of doing one thing well aptly describes the achievement represented by the line of vises turned out by the Rock Island Tool Company, Rock Island, Ill. They are made in a great variety of patterns, including several especially adapted to the needs of the automobile repair shop. An automatic self-locking swivel type is specialized by these makers, and its unique feature of locking in any position set, by merely tightening the jaws, is something that will commend it highly to mechanics who have to contend with the numerous unusual jobs that find their way into every repair shop. On this vise there are no levers, pins or wheels and no complicated mechanism—in fact, no more parts than the ordinary stationary vise. The material employed consists of a blending of the best iron and steel, this mixture making very tough castings and adding materially to the life of the vise—in fact, the makers are so confident of the high grade of the Rock Island vises that they will immediately replace any defective parts gratis, also paying return charges. A New York office, in charge of Wm. N. Briggs, has been opened in the Electrical Exchange building, 136 Liberty street.



SELF-LOCKING ROCK ISLAND VISE.

Marvel Carbureter.—Being unable to secure ample space at the Coliseum, the Marvel Manufacturing Company, Indianapolis, Ind., makers of the Marvel carbureter, will hold an exhibition of their own at the Southern hotel during the course of the Chicago show. In the construction of the Marvel carbureters, a sectional elevation of one of the float types being shown by the accompanying sketch, the makers have given careful consideration to the matter of materials. In the body only the best grade of red brass is used, while the gasoline needle and float valve bearings are made of the finest rolled Tobin bronze. In its construction the Marvel embodies many exclusive features, such as the universal gasoline connection, which facilitates its mounting on any car without the necessity of making alterations; ease of adjusting the float or float valve, removing the bowl or draining the residue from it, all of which can be done without changing the adjustment of the carbureter in any way. An annular type of float is employed and by combining the short neck of the carbureter and the inside union connection, the designer has gained a powerful leverage with a very short fulcrum, thus preventing flooding and bounding. An equalizing spring has also been added to the float needle, which gives a floating balance and an ease of movement which prevents any jar arising from sudden movements of the float. For cleaning, it is only necessary to remove the bowl and loosen one adjusting screw to release the entire float valve, needle and its accessories without disturbing their adjustment.



CROSS-SECTION ELEVATION OF THE MARVEL CARBURETER.

Sireno.—This is the title of a new siren signalling device which is being placed on the market by the Sireno Company, 39-41 Cortlandt street, New York. The external appearance of the instrument is shown by the accompanying illustration. The sound is produced by the familiar principle of centrifugal force, air being drawn through the front casing and expelled at the side openings, the current being generated by a rapidly revolving turbine driven by an electric motor. To operate, it is only necessary to push a button, the tone being regulated by the length of time the contact is made. It can be easily installed on a car, as it is only necessary to attach the instrument and connect it with the ignition battery. It operates on a current consumption of three amperes and may be used in connection with a battery of six dry cells. It is made of polished brass, but can be supplied in any finish or plating to correspond with the other fittings of a car.

SIRENO (ELECTRIC) SIREN.

Beach Auto Vest.—This is a garment new to the automobile trade which is just being placed on the market by William W. Brown, Worcester, Mass., who is the sole owner of all machinery, patents and rights for the manufacture of the well-known "Beach" cloth, jackets and vests. The cloth is knit by a peculiar stitch that does not ravel or rip, and the vests are made with a heavy wool fleece lining. The cloth is elastic without being stretchy and in wear the garment conforms closely to the shape of the body. If soiled, the Beach

vests can be washed as often as desired without shrinking, something that can be said of very few knitted garments. The material is a hard-twisted double yarn, which gives long wear, and it is so closely

THE BEACH WARM-BACK VEST.

knitted as to be absolutely wind-proof. It is made with large pockets, the lower ones being lined with canvas, buttoning at the top with a snap, and adapting them for carrying spark plugs, cotters, or other small articles. It is made in both sleeve and sleeveless styles.

Reversible Auto Tags.—Owing to the perversity of some legislatures, State lines have become *real lines* to the autoist, who must see that his credentials are in the proper shape before driving his car over

REVERSIBLE AUTOMOBILE TAG.

the imaginary boundaries that mark the limits of jurisdiction of the different State authorities. To make the lot of the autoist easy where markers are concerned, H. E. Asbury, Oak Lane, Philadelphia, is placing on the market the Asbury reversible tag, made to carry two different State numbers. In place of the usual flimsy fastenings, the holder is a permanent fixture solidly bolted to the car. The tag itself swings in brass bearings on a japanned steel back rod, to which are riveted two brass arms. After passing through two States it is only necessary to take out a single cotter pin with the fingers, swing open the top lever and put in a new tag, good for two more States, thus obviating the necessity of having the car plastered with hangers, or fastening them on temporarily as a makeshift, which not infrequently leads to a fine due to the loss of the tag.

Crown Soft Oil Soap.—The Crown Soap Company, Syracuse, N. Y., make a specialty of the production of genuine English oil soap, which is manufactured after a secret process known to but few. This company employs chemists who have been engaged in making this soap for more than thirty years past in England, where the secret of the process has been handed down from father to son in succeeding generations. Its chief use is as a preservative of highly finished surfaces and it has the quality of preserving varnish as long as it is used. It is equally valuable for removing grease from any surface and makes an excellent household and garage soap as well. It is an absolutely neutral soap of purely vegetable origin and thus contains no free alkali, which adapts its use on any highly polished surface, even such as that of a piano. Crown Metal Polish, made by the same firm, is an effective cleaner adapted for use on all metals, and which the makers claim does the work better and quicker, in addition to going further than any other compound of the kind on the market.

The American Speedometer.—One of the leading models included in the line of the Stewart & Clark Manufacturing Company, 502 Diversey Boulevard, Chicago, for the season of 1908, will be the American speedometer, which is the lowest-priced instrument of this kind ever turned out. There has long been a demand for a high-grade speedometer and mileage recorder at a popular price and there is little doubt that the makers are justified in believing that the American at $25 will fill all requirements. In bringing out this instrument, it has not been found necessary to curtail its size, the quality of the material entering into it, or the grade of workmanship employed on it. It has a full four-inch dial and is equipped with the same style of 10,000-mile odometer, barring the trip recorder, that forms a part of the Stewart speedometer. According to the manufacturers, the use of a simpler mechanism than that employed in the high-speed instruments, yet one which is positively accurate at all speeds up to 50 miles an hour, together with a new di-

THE NEW AMERICAN SPEEDOMETER.

rect flexible shaft attachment, makes it possible to supply this instrument at the very low price mentioned. Both the Stewart and the American speedometers are exclusively equipped with the patent Stewart swivel joint, the use of which permits of making the flexible shaft 18 inches shorter, and also allows it to be carried straight back along the frame to the dash without passing under or through springs without the right-angled bend usually necessary.

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